SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2080.—Vol. XLV. LONDON, SATURDAY, JULY 3, 1875. PRICE (WITH THE JOURNAL) SIXPENCE. PER ANNUM, BY POST, £1 4s.

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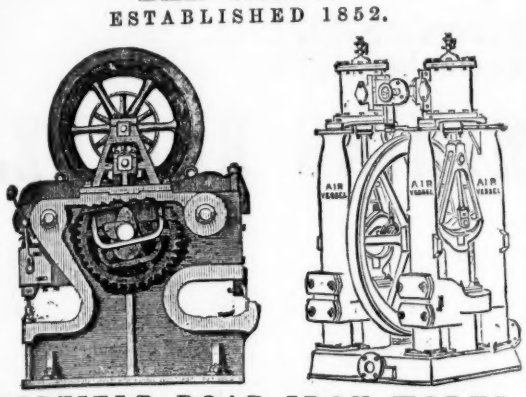

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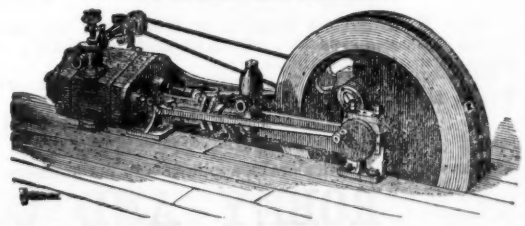

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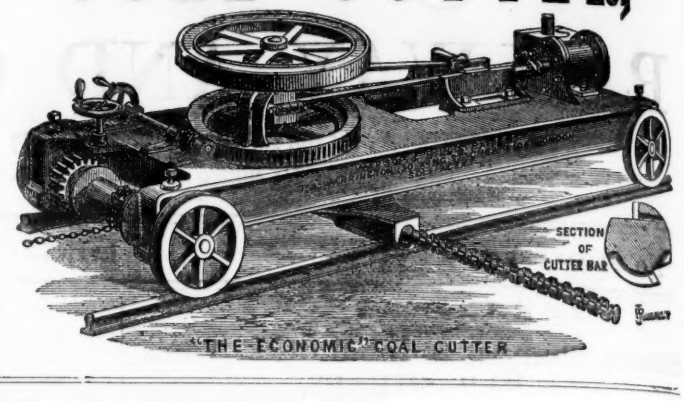

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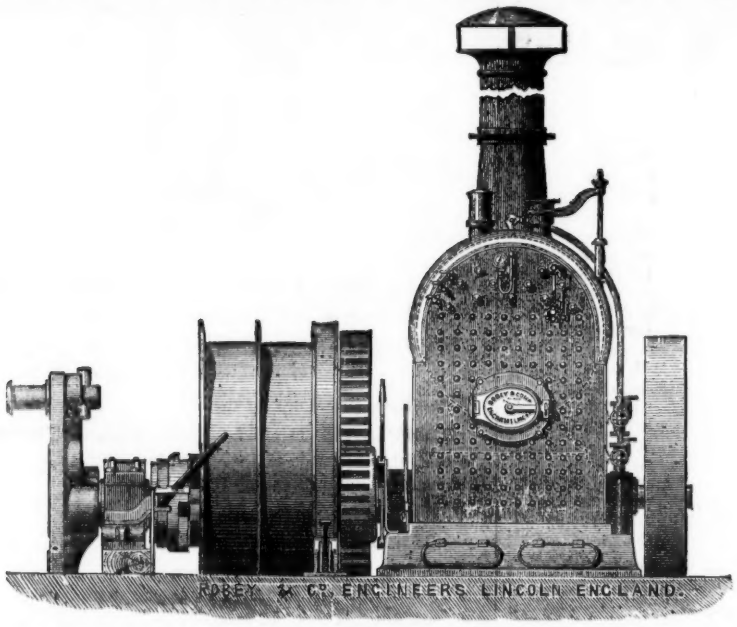

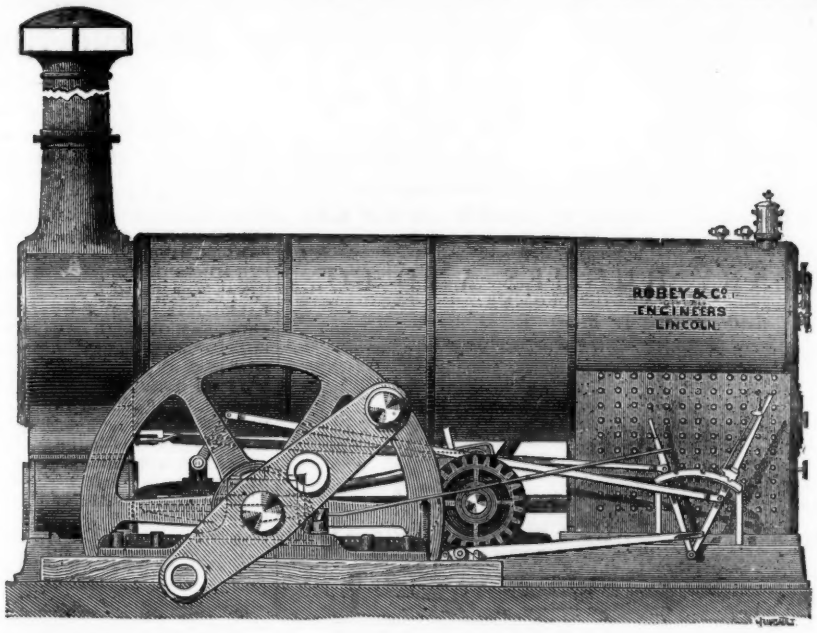

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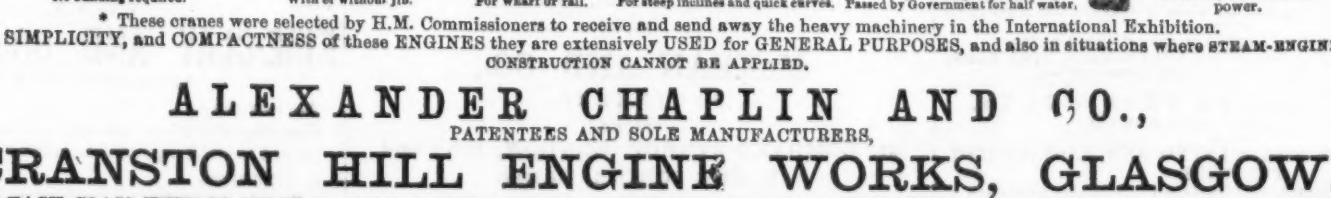

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Original Correspondence.

COLLIERS' WAGES IN RELATION TO COAL PRICES.—No. II

4.—This result leads me to the following conclusion as a simple method of adjusting the collier's claim with the market price, or rather with the master's price at the pit. When prices are good, wages should rise; when prices are bad, wages should fall. Therefore, in all cases let the collier's rate of daily wages be computed at one-half of the master's pit price of coal per ton, and let all the other labourers at the mine obtain wages which rise or fall in the like proportion. The following are some examples of the working of this rule, computed from the foregoing data:—

Regulating scale.		Working capital. Of labourer.		Of master.	Fixed capital of master.
Masters' pit price per ton.	Daily rate of colliers' wages.	Cutting coal per ton.	Accessory labour per ton.	Administration, mining staff, royalty, &c., per ton.	Net profit and sinking fund per ton.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
7 6	3 9	1 3	1 0	5 0	0 3
8 0	4 0	1 4	1 1	5 0	0 7
8 6	4 3	1 5	1 2	5 0	0 11
9 0	4 6	1 6	1 3	5 0	1 3
9 6	4 9	1 7	1 4	5 0	1 7
10 0	5 0	1 8	1 5	5 0	1 11
10 6	5 3	1 9	1 6	5 0	2 3
11 0	5 6	1 10	1 7	5 0	2 7
11 6	5 9	1 11	1 8	5 0	2 11
12 0	6 0	2 0	1 9	5 0	3 3

It is obvious that by this scheme wages cannot fall below a certain point—about 3s. 7d. per day in the worst of times—for at 7s. 2d., pit price, masters would be working at a dead loss, and would stop; nor will wages rise out of proportion to the rise in the market price; at the same time, the rise of price would enable the master to give better wages, and he might realise a profit which would compensate his disappointment during bad times. In this table 6d. change in price, or 3d. in wages, makes 4d. change in profit per ton; from which it is evident that, if wages be only 6d. more per day than half the pit price per ton, the master must, probably, lose 8d. profit, which would be very unfair, and sometimes bring on his stoppage.

It has been shown that the labourers' interest, from a working capital point of view, is about 3-10ths of the 8s. pit price, and by the proposed arrangement it remains so, whatever the pit price may be, so that the labourer can no longer say that he would derive no benefit from an improved market, while the master would barely do more than recover his outlay during a long period more or less successful. But it would be preferable, in order to leave the master an elastic corner to turn in, and not to lose under ordinary circumstances, that the men and masters should agree to something rather less than one-half—(say) four-ninths—of the pit price per ton, whereby to regulate the rate of colliers' wages. Lastly, this regulation should be based on an average of the preceding three months' pit prices for through coal, without dust or slack. In the foregoing arguments I am aware that the prices and figures which I have taken in illustration are nearly at the very bottom of the market scale, but it cannot be denied that some such prices now prevail; that being the case, it is of importance that the working men should be reasonable, and perceive the necessity of coming to fair terms.

Hitherto they have acted somewhat like him who killed his goose that laid the golden eggs, thinking probably that their master's power of endurance, and his profits were inexhaustible. I have no doubt they have been taught so, but it is high time for them to arouse from their ignorance, and to learn a little truth. I would much rather that they would try to co-operate with their masters by throwing some of their savings out of their past earnings into the business as capital. There are many masters who would gladly encourage this step; then the men would, while earning their ordinary wages, participate in the profits on capital embarked. They would thus acquire a right to learn how profits are made; they would soon find that the language used by their delegates, describing masters in general as a species of Giant Fi-fo-fum, grinding the blood and bones of their workmen into huge fortunes and luxurious mansions, is but the merest theatrical bombast; they would see, instead, men like themselves toiling hard, using their means and education honestly to better the condition of all. It is to be hoped that persons, like Mr. Halliday, whose fortunes are so closely linked with those of the men they address, will cease to agitate, and devise a means whereby these foolish—nay, wicked—disputes will end for ever, by teaching the men henceforth to depend upon their own individual talent and merit to rise in the world, the chief means of doing so being prudence, self-denial, and perseverance, which alone have laid the foundations of success to all who have risen above the lowest ranks. The man who holds a pound in a saving's bank, and who will learn to use it well in co-operation with others, will have a greater power in his possession than he can ever hope to obtain in a Trade Union, which pulls him down perpetually from the level he has a right to rise to by his independent, though co-operative, action. Never, perhaps, had the colliers so fair a chance of becoming so permanently prosperous as during the past two years, when such high prices prevailed, yet so unprofitably. Their savings might have been something enormous, had they so wished, and might have resulted in the men buying into and finally owning half the Welsh collieries, had a Lloyd Jones counselled them.

It has often been said by working men's orators that "Labour is capital," and they have fondly dwelt thereon, as though they had set up a long-lost or neglected partner of the master's capital, even pretending that the new-found claimant ought to be the "better half" of the two. Now, there is no doubt that labour is capital, but of the kind known as working capital, as distinguished from the cash fund which founds or commences a business or enterprise, and is called fixed capital. This latter disappears as specie, exists only in the form of plant and past labour, until their vestiges gradually decay and are lost, to reappear, only in the end, in the form of a saving out of profits over a long period. Labour's capital, therefore, is of the same kind as the master's working capital for administration, plant, &c., being, as it is, exchanged for the master's working specie; the united effect of both is represented in the guise of coal deposited in wagons ready to leave the colliery, the which, being sold, becomes again converted into specie in the master's hands, with a small surplus of profit, part of which, as before mentioned, gradually replaces the original sunk or fixed capital. Hence the labourer's working capital is constantly reappearing undiminished and unimpaired, nor can it ever share in the profits of the business, because it neither founds nor continues the business, both which objects are truly effected by the master's fixed or sunk and by his working capitals in specie. The only way whereby labour alone could share in profits would be to exist by some external aid, and to assist personally and perpetually; in which case, undoubtedly, its results could be capitalised, and a profit apportioned, which would be, in fact, precisely what labour does usually receive as wages, only payable in bulk annually, instead of fortnightly or weekly. It is obviously not in the nature of labour to be so treated, for it cannot have the external aid assumed; the nearest form in which a labourer can participate in profits is by self-denial—that is, by entering his regular savings into the business; or, for instance, by agreeing to work for 4s. 6d. per day, and taking 3s. 6d. only in cash, leaving 1s. in the business, and receiving the profit due to the 300 shillings accumulated each year; or by (additionally) working ten hours a day instead of nine hours, thus attaching one-ninth of his time to capital. It may be shown that if only 100 men persistently acted in this way, without injuring themselves or their employers, they could in ten years possess a property worth 36,000*l.* (360*l.* each) the cumulation of profits at 10 per cent. on their savings of wages and time. No Trade Union could ever offer them so much benefit or power.

There is one important deduction from the preceding views which must not be overlooked—every act of the master, and every act of the labourer, whether in co-operation or not, should be strictly directed to securing a sufficient return of profit to the sunk or fixed capital. As the master has to live out of this profit, having embarked in this business with that very object in view, as he has provided the labourer with a living before obtaining anything towards his own, as he must recover his sunk capital during a limited term, in order to repay those who furnished him with funds at the beginning, or to leave those funds, being his own, to his successors, so both he and the labourer are mutually bound to act so reasonably that the fund whereon both are subsisting should not be dissipated—that is, the goose that lays the golden eggs should be petted and fairly dealt by. The labourer, therefore, so far from making his claim to override his master's, must learn to be guided by the very same circumstances which influences the master's acts—he must study, and admit the inevitable deductions from the prevailing market value of the commodity produced in the neighbourhood or district where he labours.

If he do this the consequence will follow that he and his employer will prosper together; on the contrary, by not giving those principles proper attention, both must decay together. If the labourer once succeed in driving away the good men who founded his prosperity either in disgust, or in ruinous condition, to whom afterwards can he hope to look to replace the goose? He will probably become a victim to the greed of needy, unprincipled speculators, when those who were his friends, but whom he treated as foes, will be powerless to withdraw him from the fitful existence of working and striking, of repletion and starvation, which he will have chosen. After that, he and his like will remove to other regions to renew discontent and agitation, leaving the waste behind which ignorance and folly needlessly created. I have no desire that such a state of things should really come to pass, but, in anticipation of what may happen, I ask the men to look at the past and present.

Can any working man state that any benefit has accrued to him from those exorbitant terms which he lately wrested from a too compliant employer? Terms which have rather gone far to ruin both of them. Not only no benefit has accrued, but months of sad bitter suffering, and unnecessary loss to both. Yet even after all this the working men, while seeing the wreck which they have made, are not yet persuaded of the wrong view they have taken. If, therefore, those who mouth themselves so loudly to be the people's real friends (without having invested a penny in business) would only correct this sad ignorance instead of bothering the working man about rights and liberties, political freedom, people's power, and such trash (when set alongside of so much social, unchecked misery, and mischief), they would best perform that duty for doing which they draw such heavy supplies from the workingmen's earnings.—2, *Barnard's Inn, June* 24. J. B. HUNTINGTON, M.I.C.E.

COAL-CUTTING MACHINES—MONITOR AND PICK.

SIR,—In the discussion upon the relative merits of the rotary and percussion systems of coal-cutter construction, running through the recent numbers of the *Mining Journal*, the Monitor Coal-Cutter seems to be made so much of a football by your correspondents that I feel called upon to go to its rescue. To touch upon the original question, however, I am willing to concede that Mr. Firth's mechanical pick has unquestionably the merit of simplicity, and that it will channel a groove I am fully satisfied, having seen one in operation in the Garth Colliery of the Messrs. Brogden, in South Wales. I noticed, however, that the enormous scythe-like arm required quite as much time, and substantially the same expenditure of power, to draw it back as to deliver the blow. The power thus expended is, it is true, to a certain extent returned in the form of momentum, acquired by the arm during its swing before striking the coal, but this gathered force is exerted at the beginning of the cut, where it is less needed, and is gradually exhausted until towards the end, where the greatest resistance is met the blow is weakest. The tremendous concussion incident to first striking not only shatters the body of the coal, but would be very trying on weak roofing. In the pit in question I frequently saw large pieces of coal sent flying through the air, much to the discomfort of the operator, and it was not at great intervals that large masses settled down upon the arm, necessitating a stoppage until the obstruction was removed by hand. If a piece of compact close-grained coal be cut by the sharp edge of a knife, it will yield to the steady pressure, whereas quick blows from the point of the blade would have comparatively little effect. Coal, like anything else, should be humoured in little matters of this kind, and in designing a machine to act upon it they should be taken into consideration. Mr. Firth, however, seems to depend upon sheer weight of metal, overcoming by bringing an irresistible force to bear, while the same force, if applied with a proper regard for the peculiarities of the material acted upon, would accomplish more. The stroke of Mr. Firth's engine is 12 in., and by a direct connection actuates the short arm of a lever, the long arm of which, if a 3-ft. cut be made, must be at least 4 ft. in length, thus giving the resisting material the advantage of the attacking force in the ratio of four to one.

The automatic removal of the fine coal is very essential to successful mechanical mining, and although the machine in question keeps up a vigorous shower of broken coal, there is a very large percentage of the slack left in the groove subject to subsequent removal by hand, which is not only an expense, but requires immediate attention, otherwise the coal might settle upon and pinch it, and the groove be lost. On the other hand, the rotary system overcomes all the disadvantges enumerated; the action is even, continuous, and rapid; one-third of the teeth of the cutting wheel are always at work, and in the meantime the rest are coming around to do their share in succession. In this connection, with Mr. Firth's permission, I desire to correct his statement to the effect that the teeth on the entire periphery of the Monitor's cutting-rim are in constant resistance; in this he ascribes too much to the Monitor; such a mechanical impossibility its most sanguine friends do not expect to see it accomplish. Of course, Mr. Firth thoughtlessly made this statement, but as upon the idea thus conveyed he based a qualification of one of his estimates, I feel called upon to refer to it. The equal distribution of the resistance among numerous cutting points, the overcoming of leverage in the transmission of power through the cutting parts, the facility with which the machinery can be geared every remove from the engine to the cutting points, so as to gain in power, and the automatic removal of the chippings, place the rotary machines decidedly in advance of those on the percussion principle.

Mr. Firth's mathematics, showing the performance of the Monitor, must undergo some radical changes, and the cloud he has raised by his assumptions and suppositions cleared away before that machine can appear in its true light. The Monitor was specially designed to work in the dense and compact block coal of the Indiana basin, which coal in the vein is separated by two series of vertical slips, crossing each other at right angles, blocking the coal into cubes nearly 4 ft. through. To successfully use a machine in this coal it is necessary for the cut to reach the slip—say, 48 in.—and as the face of the coal is often quite uneven a cutting wheel of the diameter used is indispensable. In my paper referred to by Mr. Firth I only gave the diameter of the wheel proper, 5 ft.; the cutting teeth and reversible sockets add 2 in. more to each side, increasing the total diameter to 64 in. The size of the cutting wheel is not a vital feature; it can be enlarged or reduced without any material alteration of the driving parts. Both Mr. Firth and Mr. Bass base their estimates of the capacity of their machines upon continuous working without interruptions of any kind. My estimate of 50 tons in 10 hours—increased in a note appended to my first communication to 70 or 80 tons—gave the net result, after deducting all loss of time occasioned by falling slate, propping, changing cutter points, moving of machine to new face, &c. The assumption that the air pressure required to drive the Monitor is 40 lbs., is too hasty. The large cylinders, 9 in. by 8 in., which so appal Mr. Firth, were purposely so constructed in order that air of a low pressure might be employed. In actual practice 20 lbs. at the compressor is used, and the cut-off being at two-thirds stroke, the pressure averages 17½ lbs. In his 20 per cent. (one-fifth) allowance for the trunks in the Monitor's engines, Mr. Firth is too generous; the real dimensions of each trunk are 2 in. by 8½ in.; and—

$$63{\cdot}6 \times 2 = 127{\cdot}2 - 17 = 110{\cdot}2 \div 2 = 55{\cdot}1.$$

Thus 55·1 is the average net area of each side of the piston, or 13·37 per cent. less than if no trunks were used. Correcting these items of pressure and piston area, the horse-power is arrived at as follows—

$$\frac{2 \times 55{\cdot}1 \times 17{\cdot}5 \times 180 \times 1{\cdot}3}{33{,}000} = 13{\cdot}68\text{-horse power.}$$

Following the example of your other correspondents, and basing the estimate of the capacity of the Monitor upon continuous working and cutting to the extreme depth, the result would be as follows—9 in. per minute equals 15 yards per hour, and an undercut of 56 in. in 4-ft. coal, yielding 28 cwts. per square yard undercut, produces 31 tons per hour, or 310 tons in a 10-hour shift, exceeding the work of *three* of Mr. Firth's machines. The horse power of the Pick machine is given at 4·75, or for the three machines necessary to do the work of a single Monitor, 14·25-horse power, against 13·68-horse power of the latter. The consumption of air by the Monitor is shown thus:—

$$\frac{2 \times 55{\cdot}1 \times 8 \times 180 \times 2}{1728.} = 183{\cdot}6 \text{ cubic feet per minute.}$$

$183{\cdot}6 \times 60 = 11{,}016$ cubic feet per hour, during which time 31 tons are cut; an expenditure of 355·3 cubic feet per ton. The pressure of this air is one-half of that estimated by Mr. Firth to cost 6d. per 1000 cubic feet. I, however, doubt whether, under similar circumstances, the cost of the low-pressure air would reach one-half that of the high-pressure; but putting the cost at one-half, or 3d. per 1000 cubic feet, the power expense of the Monitor for each ton cut would be 1 1-14d., against Mr. Firth's estimate of 1 1-12d. for his machine. I distinctly state that in the Monitor's operations the pressure at the compressor is 20 lbs. I cannot understand from Mr. Firth's communication whether he fixes 40 lbs. as a standard pressure to be used in the present discussion, or whether in actual practice his machine is driven by air at that pressure. In your Editorial of May 1, you give the pressure used by the Pick machine in the West Yorkshire Coal and Iron Company's pit as 52 lbs., which would make a material difference in the preceding estimates. You also give, in the same connection, the pressure as 45 lbs. in the New Market pit, where the Gillott and Copley machine is at work. From the fact that the Pick machine loses so largely by leverage, and the Gillott and Copley cuts a groove nearly double the width of that of the Monitor—3¾ in. in the former case, and 2 in. in the latter—it is natural to suppose that more power would be required to drive either of the two first-named machines than the Monitor.

To Mr. Bass's intimation that the Monitor is but "a mutilated copy" of the patent he represents, I would reply that the former was in full operation before Mr. Brown (its inventor and patentee) had any knowledge whatever of the Gillott and Copley machine.

Arch-street, Philadelphia, June 16. J. S. ALEXANDER.

COAL-CUTTING MACHINERY.

SIR,—In reply to Mr. Firth's letter as to the trial at the New Market Colliery, I shall not deposit the 100*l.*, nor 100*d.* I do not know what he means by caution money. The rotary machine is regularly working there, and if he will arrange with Mr. Parker, and send his machine over, as proposed in his letter of May 15, giving me due notice of the time, I will meet him there, and shall be quite glad for the trial to take place in the coal as well as in the dirt, provided Mr. Parker can so arrange it. This is accepting Mr. Firth's original proposal, amended as to cutting in coal, as per his letter of June 23, in all respects, except as to the money wager, which, as I said in my last letter, "cannot in the most remote degree affect the result." If Mr. Firth does not come forward to complete the challenge he gave I shall do as he did himself when no one cared to compete with him for the prize he offered—claim the victory, and call on you to award the honours to me. I will thank Mr. Firth to state the year in which the work he refers to at Wharncliffe Silkstone was done.—*Bow-street, Sheffield, July* 1. I. G. BASS.

PREVENTION OF SMOKE.

SIR,—If I may form an opinion from the smoky condition of the great manufacturing town near to which I reside, the prevention or consumption of smoke is still an open question, the various plans hitherto invented for that purpose not having fully answered their intentions. The principle to be held in view, I suppose, is to bring every portion of fuel into contact with the requisite quantity of atmospheric air to secure its entire combustion, as is so successfully accomplished in the various descriptions of lamps in general use. For this purpose I propose the division of the grate of the furnace into a series of ridges, with interspaces for the admission of air, so that each portion of the fuel may be exposed to its influence. The ridges are made 6 in. deep and 3 in. wide, and the interspaces for the admission of air ½ in. But any preferable dimensions can be adopted. The quantity of air to be admitted can be regulated by a slide at the lower part of the door of the furnace. In order that practical men may state whether the plan appears worthy of consideration I should feel obliged by your giving publicity to this communication. T. M. G.

USE OF GUNPOWDER IN MINES.

SIR,—There is a very remarkable statement in your notice of the miners' deputation to the Home Secretary on the subject of Labour Laws and Fiery Mines—that Messrs. Crawford, Dickson, and W. Pickard submitted that "no person should be allowed to drill holes or use powder who was not by examination found competent to do so with safety to himself and others; that the use of powder in very fiery mines, in wholly uncut coal, was one of the fertile sources of explosion; and where the mines were fiery the use of powder in absolutely fast coal as far as possible ought to be avoided." Now, although these suggestions, as a whole, are excellent, as would be expected, seeing that all the speakers are practical men, they contain one very dangerous suggestion which might escape notice. It is proposed that no man should be permitted to drill a hole until he has passed an examinetion. Many might pass this by as harmless from its absurdity, but there is really nothing absurd about it. For many years past there has been a streuous effort to prevent any outsiders being introduced into mines, from the false notion that by that means excessive wages can be kept up, whereas the fact is that excessive wages drive the trade from the district, and it can never after be recovered. The men get a temporary advantage, but the masters are ruined, and for this the men themselves ultimately suffer. Where there is no competition the masters care little if wages are high, because they can increase the price of the material sold, and thus secure their profit, but it is now very generally felt that it is not worth while carrying on a concern merely for the pleasure of paying workmen.

To prevent any but those who have passed an examination from drilling a hole would really place the masters under the thumb of the men, by preventing the employment of any but the nominees of the workmen, and the small dividends we now obtain for the money we have invested will be reduced to nothing. My contention is this. A man who invests his money in an industrial undertaking ought to get more than the 3 per cent. he can obtain from investment in the Government Funds, but I should be quite content with 8 per cent. An ordinary tradesman expects 12 per cent., but I should be willing to submit to loss of one-third of this for the difficulty of management by directors and strangers; yet in too many cases the investor now gets nothing, although many thousands a year (in one case I know 80,000*l.* a year) is paid to the workmen as wages, and the directors and managing officers (in which category I include all receiving over 100*l.* a year salary) have another 10,000*l.* And in fact, more than a thousand families are being supported by the use of the shareholders' money, yet the shareholders have not had sixpence dividend for the last five years, and in the face of this the men recently struck for higher wages, and it was only by bringing in a few outsiders that they were brought to reason. There are always two sides to every question.

Now, as to the employment of these outsiders. I can assure you that they are not employed in the most difficult work, and are certainly not entrusted with any work the ill performance of which could jeopardise the safety of the pit. Coal mining is not skilled labour, and most men who have been a month at it are quite as valuable as old colliers. Old colliers, however, are always put in the

best paying places, because they are considered entitled to higher wages; but as a matter of fact it is just the old colliers who will not work without powder. They say that with their experience there is no danger, and make such excessive demands for dispensing with blasting that the prohibition of powder becomes impracticable. For my own part I would have principally outsiders, if possible, with 50 experienced colliers willing to submit to discipline to superintend them; there should be a regular staff of hole chargers and shot firers, or the use of powder should be prohibited throughout the country. In either case the working could go on with military precision, and deaths from explosion in Yorkshire and Lancashire would be as few as in Northumberland, where the mines are not less fiery, though by infinitely better management loss of life is avoided. But such a change would involve a different distribution of the wages, and here difficulties would arise which might stop the works altogether.—*Ripon, June 29.* SHAREHOLDER.

TIN MINING IN QUEENSLAND.

SIR,—The quantity of Tin dispatched from the Warwick Railway Terminus (March), was—

Stream tin	Tons	397	17	3 19
Ingot tin		2	8	3 16
Total		4	0	6 3 7

And for the quarter ended March 31, has been—

Stream tin	Tons	1070	12	2 18
Ingot tin		8	6	2 0
Total		1078	19	0 8

Showing a reduction of 238 tons on the same quarter in 1874, and a reduction of 300 tons on the previous quarter. The quantity of tin dispatched from Murrurundi Railway Terminus for the quarter ended March 31 was—stream tin, 609 tons 0 cwts. 2 qrs. 12 lbs.; ingot tin, *nil;* showing an increase of 50 tons over the first quarter of 1874, and a decrease of 130 tons on the previous quarter.

The Grafton receipts I have not yet been able to procure. Calculating the bad state of the roads, and the previous year's returns, I take it to yield about 500 tons, which will make the total yield for the quarter about 2200 tons of stream tin; showing a total *estimated* decrease on the same quarter of 1874 of 765 tons, and a decrease on the previous quarter of 730 tons. But I am bound to state that in my opinion this decrease is only imaginary, as the long and heavy wet weather during the latter two-thirds of the quarter, and the drought during the first third, must have considerably affected supply, the roads till lately being very bad, some altogether impassible. There was also much tin held at the mines waiting improvement in prices, and which is still held. As a further check to my tin returns for 1873 and 1874, I give you the quantity of stream tin received at Newcastle (N. S. Wales) and Morpeth, to be smelted, from Murrurundi, and which I have only just received, as follows:—

	1873.				1874.			
At Newcastle	Tons	448	15	3 6	Tons	691	5	0 5
At Morpeth		1530	13	3 10		1683	2	2 15
Total		1979	9	2 16		2374	7	2 10

The total for 1874 proves my figures, already forwarded you, correct. The drop in the London market of 2*l.* per ton on ingot tin, as advised by wire, on April 12, has paralysed buyers and shippers on this side, while a rise of 10*s.* per ton in freight during the past fortnight tends to further reduce the price here. The miners, I have already mentioned, are holding in quantity at the mines, but on what grounds they are calculating on a rise in price I cannot fathom, since the large stock held in England on Dec. 31 last, and the increasing quantity we produced during 1874, forbids any such supposition, unless there springs up an increased demand from the manufacturers at present unforseen, while the very report of holding an unknown quantity at the mines must cause suspicion, and consequently weaken the market still further. The better course for the miners to have followed would have been to forward their tin, as raised, to the smelting works, and hold it in ingots. We should then know the quantity held, and confidence might be somewhat restored.

Another question of moment is how long can the miners hold out? Those that pay wages cannot, on the average, hold out over three months without parting with their men, when production would be stopped. The miner working under a license, and on his own account, can work cheapest and hold out longest, as his living, if a single man, does not exceed 1*l.* per week, and few of them but have more or less cash to their credit in the Government Savings Bank; the married men, working the same way, can also hold out a long time, as their actual living costs very little more, and the storekeepers will be always glad to give credit to a man who is holding his tin; to the tributers it is altogether a matter of price, the margin of profit is now getting beautifully less. To some I know they must either work at a loss, or take the other alternative—knack. One half of the men can keep going and make wages with stream tin at 35*l.* per ton at the mines; but miners in this country must have something more than wages, so that I have little doubt if the present price continues for three or four months it will affect supply.

Nominally Ingot Tin (Queensland Company's, 99·50) is quoted at 80*l.*, but for some time (since the last drop) I have heard of no sales, and I am sure 78*l.* would be gladly taken. On the mines, prices run from 36*l.* to 40*l.* nominally, but excepting small lots taken in exchange for goods by the storekeepers at 4d. per lb., there is nothing to report. Since Jan. 1 there has been only 150 tons ingots shipped direct to London, in three ships. RESIDENT.

Brisbane, April 23.

MAGNITUDE OF MINING IN NEVADA.

GRAVEL MINING IN CALIFORNIA—THE NEW BANK OF NEVADA IN SAN FRANCISCO.

SIR,—Since the early days of gold discovery in California there has never been such impetus as is at present given to mining enterprise in nearly every section of Nevada and California; this revival is due to a great extent to the late rich developments in the Consolidated Virginia and California Silver Mines. Under the influence of the bonanza excitement created by these two mines, the work of prospecting, sinking shafts, drifts in all directions, have been actively resumed in the hundred mines located on the Great Comstock Lode, on a length of over 6 miles. It is, therefore, hoped that important discoveries will be, before long, the reward of companies engaged at great expense in the development of their property. It will be found interesting to know the magnitude of mining operations conducted by the new kings of the Comstock, whose good fortune has been to strike the big bonanza. The firm of Flood and O'Brien, at San Francisco, of which John W. Mackay, the principal interested, and Jas. G. Fair, the superintendent of the mines, both residing at Virginia City, are partners, have the controlling interest and management of the following valuable mines—the Consolidated Virginia, California, Best and Belcher, Gould and Curry, Hall and Norcross, Occidental, and Utah. Mr. James G. Fair is the superintendent of all the above properties.

The Consolidated Virginia Mining Company, according to the statement kindly furnished me by Mr. J. M. Taylor, one of the head clerks of the company, has already shipped 3620 bars of silver, aggregating over $11,000,000. The net monthly proceeds of that extraordinary rich property have been on an average $1,500,000 per month. Shareholders have every reason to be satisfied with the large income which they receive monthly, and with the honest management of their interests. The California Mine will commence to pay dividends as soon as its 60-stamp mill shall have been completed, which will be in the next three or four months.

The following mills are the exclusive property of the firm of Flood, O'Brien, Mackay, and Fair, and are for them a source of large profit, resulting from the milling of ore on account of the mining companies under their control and management: The Consolidated Virginia Mill, with 60 stamps, and all modern improvements, the finest establishment of the kind in the Pacific States; the Bacon, Occidental, Kelsey, Trench, Devil's Gate, Sacramento, Mariposa, and Hoosier State Mills. The full milling capacity of all the above mills now in operation is 17,000 tons of ore monthly. With the California 60-stamp mill completed, the full capacity will be raised to nearly 27,000 tons per month.

With such extraordinary resources at their command, the above firm have found it expedient to incorporate a Banking Association, which, under the name of Bank of Nevada, and a capital paid-up of $5,000,000, will commence operations by Sept 1 next, in San Francisco. It is expected that this powerful establishment, through an honest and active competition with the Bank of California, will materially advance the financial and mining interests of the Pacific Coast.

Mining at Gold Hill is pushed on most vigorously, the Old Belcher and Crown Point Mines are looking for new developments; there are a number of new claims which are most promising, among them the Leviathan Mine, adjoining the Belcher, which I have examined lately. The ledge of the Leviathan, which was 32 ft. wide at a depth of 90 ft., is now 92 ft. wide at a depth of 200 ft. It is well-defined, and the character of quartz which has been struck give all indication of a rich property.

From the State of Nevada I returned to California, where, in company with a mining expert, and acting under instructions from the London and Pacific Coast Land and Mining Bureau, I had to examine and report upon several mining properties, some of which are intended for European financial markets. I had the opportunity of visiting the mining districts of Grass Valley, Nevada City, Bloomfield, San Juan, Comptonville, and Brandy City, in Sierra county. All quartz mines in the neighbourhood of Grass Valley, Nevada, and elsewhere are in a flourishing condition.

Gravel mining is attracting considerable attention at Bloomfield, Camptonville, and Brandy City, and there is no doubt that hydraulic mining companies engaged in washing out the rich auriferous deposits which exist in these localities will before long realise handsome profits. To foreign capitalists hydraulic mining offers certainly the safest and most permanent investment.

San Francisco, June 6. J. BERTON,
President of the London and Pacific Coast Mining Bureau.

MINING ON THE PACIFIC COAST—No. X.

SIR,—Western Nevada has had a monopoly in the bonanza business long enough; other sections are now beginning to come to the front. When fashioning the various channels that were to become the depositories of her metallic treasures Nature did not entirely confine her primitive operations to the region of and surrounding the Comstock. Eastern Nevada also became one of her most favoured beneficiaries, as has been already largely exemplified by the product of every district within its length and breadth. This portion of our State has been highly favoured, and now it has a veritable bonanza of its own to talk of and grow merry over. This is eminently proper. Every household should have domiciled beneath its roof its own lores and penates to which to sacrifice to occasionally. In like manner every district should have its own idol to do homage to, in the shape of an immense bonanza enshrined not alone in the depths of its mountains, but also in the thoughts of its inhabitants, to excite their ardour and keep alive that exploratory spirit which has heretofore done so much for Nevada. Our sister district of Eureka, to the north of us, has at last, it appears, succeeded after years of patient toil in developing just such an object. Eureka is, therefore, exultant, and well it may be, for its future is rendered radient by the brightness of the destiny that awaits it. There can no longer be a doubt about it, and it may now with confidence lay claim to the honour of possessing the biggest bonanza that has yet been discovered on the Pacific Coast. This development the writer has always predicted would sooner or later be made, and now his assertions have been at last verified. Time, too, will place the seal of its fulfilment upon some of his prognostications relative to other districts also. It is only a question of labour and expenditure, and if mineral indications and geological formation might be allowed to form the basis of an opinion, both will meet with the early reward they merit.

There is no more favourable section in Eastern or Western Nevada for mining than that of which Eureka is the centre. For a radius of 150 miles from the Richmond Mine the metalliferous character of the county is such as to inspire all who have inspected it with the deepest confidence in its future greatness. The Eureka bonanza will now attract much greater attention than any of the discoveries that have preceded it. It may be asked why should such a result follow? The reasons why it should are obvious, to such as are acquainted with this quarter of the State. First, Eureka has a railroad whose terminus is all but at its doors, and this is no slight desideratum in a place whose base bullion production is so erroneous. Already it has afforded facilities of transportation and travel, which have added largely to its prosperity. If so great a measure of success has so far resulted to Eureka and adjacent districts from rail communication 40 miles distant, what may not be hoped when it comes, as it will during the present summer or autumn, to be firmly united by iron bands with the great continental highway? When this becomes *au fait accompli*, and the iron horse is bounding along our valleys at the rate of 20 miles an hour, freighted with the rich products of our mines, then will become still more apparent how vast and exhaustless are the metallic resources of our mountains.

Will Englishmen, under such circumstances, not to mention present inducements, still remain wrapt up in their mantles of prejudice and antipathy, and allow the unavoidable losses of the past to stay their national energy and retard the bent of that world-wide enterprise for which they have become noted in connection with mining? No; I cannot believe it, however much they may have suffered from former ignorance on their own or agents' parts when applied to mining in its earlier stages in this country, or from the venality and corrupt practices of many of those same agents, whose collusions with rascally mine vendors in years past are matters of public notoriety. Experience should remove these injurious prejudices, for that they are highly injurious to both themselves and the good name of this State is certain. There was a period when American mining securities sunk below par, if par might be taken as the zero of public opinion in England; but this is no longer the case. One mine, such as the Richmond Consolidated, or the Tybo Consolidated of this place, is capable of making amends for a generation of incurred losses, whereas the failures, after all, have been comparatively few, and they, with the exercise of proper care on the part of speculators, would have been prevented. But yet, when these things are looked at in the light of experience, they sink into trifles compared with the many and stupendous reverses suffered by American mining companies from the frauds that have been practised on them by the blacklegs of this Coast in early years. We are now, however, free from such hindrances to sleep and digestion; they are yet, though, the bugbears of the English imagination, haunting it in its sleeping and waking moments.

But to our bonanza. It is the wonder of the mineral world; this is the pronounced opinion of those who have carefully examined its huge proportions, and these are greater than the Comstock bonanza has yet exhibited. Its dimensions, so far as explored in the lower levels of the Eureka Consolidated and Richmond Consolidated, can only be approximated for awhile to come. The present ore developed in these two mines is such as to challenge the highest admiration, for the ore bodies are indeed marvellous in richness and extent. Ruby Hill and Comstock will soon become convertible terms in the mining nomenclature of this State. The bonanza was carefully examined a short time since by Capt. Osbiston, Prof. Price, and many of our most experienced miners and others, and they are all unanimous in declaring it superior to the Comstock, and that nothing equal to it has yet been brought to light in Nevada, or perhaps in the world—at least the mineral world. Capt. Osbiston is the private mining expert of Mr. Sharow, who is probably one of the greatest operators in this country, senator and millionaire, for there appears to be a fellow-feeling between money and politics, for the former (brains not needed) will always purchase, the senatorial to go here, if not elsewhere. He inspected it in the interest of both his employer and the Eureka Consolidated Company, and his report will be sure to exercise a favourable influence on the interests of this whole section of country. Prof. Price is an expert of some reputation, an Englishman, and, therefore, his word ought to have some weight in such matters with his countrymen. He made a careful survey of the Richmond Mine on behalf of its directing magnates, of course, and his opinion is that nothing like it has been yet discovered in this country, or on the continent of America—a phrase that admits of a wider signification. I may give a detailed description of it as developed in the above mines, for it permeates both, in a future letter.

The deepest sinking in the Richmond is 600 feet, and the lowest level of the Eureka Consolidated has attained a depth of 700 feet, vertical exploration, and yet neither water nor bottom have been reached, and whatever the former may do the latter must be classed as belonging to the order of improbable events—improbable as regards our times. The Richmond and Eureka properties may or may not be located on distinct lodes, but whether such is or is not the case matters not much, since both are declared true fissure veins, and being thus declared it follows that the venous arteries must be separate formations, though leading from the same source in the heart of Ruby Hill. This declaration should quiet the fears of all those who still harp on a lawsuit as being among the possibilities of the future; and though I have no apprehension that such a thing will ever again happen between the companies named; still a legal battle, in as far as it relates to mines and mining, may at any time be precipitated in this country by unprincipled schemers.

In my last letter I promised to point out the reasons (I cannot fully in this) why the Richmond, with as valuable and, hitherto, far more productive mine than its neighbour on the south, and also with less shares than it, should rule so low in price, and should, besides, have paid so few dividends of late, while the other, which now rates at 14*l.* 8*s.* in San Francisco—a rise of 2¾ since last writing—has been paying its regular monthly dividend of 4*s.* right along. That there is something rotten in Denmark is certain, otherwise the Richmond would be selling not only higher, but have also paid more dividends than it has of late been doing. The amount disbursed to shareholders by the former company aggregates nearly, if not quite, $1,200 000 since its inauguration, which took place a few months previously to the bringing out of the latter in London. This is at the rate of 24 per cent. on its nominal capital of $5,000,000, divided into 50,000 shares, and a clear gain of $1,000,000 over the amount set aside originally for purchase and working capital. The property has passed through many trying ordeals, the principal of which was the bad management to which it was subjected in the years immediately subsequent to its incorporation. The Richmond may have done as well, but this is for shareholders to determine. With proper management this property should and could be made to pay a net revenue of not less than $100.000 per month. But to do this experimentalising would have to be dispensed with, and order, economy, and method should take the place of looseness, extravagance, and disorder. These abuses, together with the authors of their perpetuation, should be ruthlessly weeded out, and laid on the shelf devoted to antiquarian relics. For the latter, at least, this would be the most fitting place. These remarks apply, of course, only to that period embraced between June, 1874, and March, 1875, because it was only during that time that the most glaring inconsistencies, to call them by no worse name, cropped out in the management. Of the present management I know little beyond what is derived from report, and since I never rely on so slender a reed for support, I forbear any reference to it. However, the fears of the correspondents of the Journal of May 8 are groundless, for, instead of 8¾ being the proper selling price of Richmond, it should rate far above these figures, provided everything else was equal. But since they are not (mine excepted), shareholders should be content with a state of things which they themselves tolerate. J. D. POWER.

Tybo, Nevada, May 29.

THE CLIFTON SILVER MINING COMPANY (LIMITED).

SIR,—Your valuable Journal being a medium through which facts can be circulated to a large and influential body of shareholders when they, from sheer annoyance through the many errors of judgment on the part of their representatives, and other causes, have ceased to attend meetings—to those they are, of course, invited, but they are made up, as a rule, of the directors and a few friends sufficient to make a quorum, and one or two energetic shareholders, who denounce almost everything the directors say or do, and not being supported by the large body of shareholders (who neglect to do their duty to themselves and fellow-shareholders), any amendments or remonstrance on their part prove unavailing—in the hope that every shareholder will arouse himself from his present lethargic state, I will endeavour to state a few facts regarding this company and its management, without regard to absolute dates and figures, as I have no memoranda before me. A few years ago this company was formed to work the Clifton Mine, near Central City, Colorado, a property of large extent, the sett being 4200 ft. in length. It was purchased on the favourable report of Mr. C. S. Richardson, an English resident in the locality, and whose scientific knowledge is beyond dispute. Since the property has been owned by the company Capt. Kendall and other experts have visited it unprofessionally, and all have pronounced it a very fine and strong lode, being rich in galena, and containing silver from 30 ozs. and upwards, but capable of being concentrated to a far higher value.

From the first ill-luck seemed to attend the company. An experienced Cornish mining captain was sent out (in my opinion an error, as mining in Cornwall and Colorado are totally different), and with him a young man from a London banking house as manager. The captain after a few months died, and the young manager, whose knowledge of mining was not very extended, was elected to his place. For about two years he so managed the property as to expend the largest portion of the working capital—15,000*l.* After many complaints from shareholders who had visited the property, and saw failure in everything that was being done from want of proper judgment, he was superseded by a new manager from London, whose only recommendation was that he understood medicines. It had been better for the company if he had remained at home at his apothecary stores. It is hardly necessary to state he was dismissed, having been in residence only a few months, the company having been at the expense of sending him and his family out.

A local man was now entrusted with the management—a miner—in fact a former part owner of the property, and had he been assisted with the needful funds from the company he would have made the mine pay, but the former managers had expended all the working capital, and the little sum that was sent out to him to work with was swallowed up in paying back debts incurred by them, and the result was *nil* from want of funds. In about three years the whole of the working capital was expended, and the question suggests itself—where has the money gone? It has simply been wasted by incompetent men, at the expense of the whole body of shareholders. But now comes the crowning point, and to which the attention of the shareholders is particularly drawn.

The Pittsburgh Smelting Company offered to take all the ore raised on certain conditions. A contract was entered into to raise funds, the shareholders were invited to attend a meeting to pass resolutions to raise mortgage debenture bonds for 4000*l.*, bearing interest at 10 per cent. The resolutions were carried by the majority present (about six in number), but urgently opposed by a minority, who foresaw the result. There being no shorthand writers present these facts were known only to those present. Debenture bonds were issued to the extent of 2000*l.*, and it was stated that all were taken up, the remarkable fact being that the Pittsburgh Company took 500*l.* of these mortgage debentures, on the understanding that they should put their own manager to work the mine, at a salary of $3000 per annum, to be paid by the company, and a bonus of $1 per ton on all ore raised. Would any body of business men comply with such terms? But the terms were complied with, and with this result, that the ore sent to Pittsburgh was reported worthless, and at the expiration of the first six months the shareholders are invited together on the 9th prox. to consent to a voluntary winding-up of the company. The true English of which is the company is in default on their half-year's interest (82*l.* 10*s.*) due to mortgage debenture bonds, the holders take over the property as first mortgagees; the amount of subscribed bonds, according to the circular, dated June 28, being 1650*l.* Such a transaction as this, I think, is too transparent, and need not be enlarged upon now, but if the shareholders will only come to the front at the next meeting and

personally resist this attempt to deprive them of their property, the object I had in view in laying these facts before you and the shareholders will have been achieved, and apologising for my rather lengthy communication, in which I have endeavoured to be as brief as possible, I am, &c. A SHAREHOLDER.

THE CLIFTON SILVER MINING COMPANY.

SIR,—In view of the circular which has been issued, under the signature of the secretary of the above company, dated June 28, I would venture to trespass on your valuable space in order to ventilate the circumstances which have necessitated the circular in question, and which have reference to the voluntary winding-up of the above company; and I would take this medium of so doing from the fact that there is a large body of shareholders who, up to the present moment, have not either attended the meetings, or in any way taken an interest in the matter.

The company in question was started in the year 1871, with a capital of 35,000*l.*, in 7000 shares of 5*l.* each, and from the original prospectus and the experts' reports, appeared before the public as a most promising undertaking, and of great value. It has never made the slightest headway, and the management has been from the first, although several times changed, anything but competent, and the result is that the whole of the money subscribed has been injudiciously expended. The directors called a meeting of the shareholders to sanction the raising of 4000*l.* worth of debentures to be a first charge on the property; 1650*l.* of these debentures were taken up, and a contract was entered into with the Pennsylvania Lead Company, under which that company contracted to take whatever ore could be raised. After a short time this 1650*l.* has followed the rest of the money subscribed, and a meeting, as I have before stated, has been called to wind-up the Clifton Silver Mining Company voluntarily, and to appoint liquidators.

As I am informed, the Pennsylvania Lead Company is the largest holder of the debentures; and as in the circular issued by the Clifton Silver Mining Company the directors advise the shareholders to consent to the immediate foreclosure at the hands of the trustee for the bondholders, the major portion of our property, on which we have expended such a large sum, will be in the hands of the Pennsylvania Lead Company and their co-bondholders. I would, therefore, suggest that in view of these facts the shareholders of the company should attend the meeting to be held at the company's office, 21, Great Winchester-street, on Friday, the 9th inst., at three o'clock, and endeavour to procure from the directors the information which at present is not forthcoming by this circular.

In these days of joint-stock agitation surely such a case as this should not be allowed to quietly lapse without being thoroughly looked into.—*July* 2. A SHAREHOLDER.

CAPE COPPER MINING COMPANY.

SIR,—I hope Mr. Scholefield is satisfied now that the liabilities of the company have been reduced the last 12 months by some 40,000*l.*, and the handsome quarterly 20s. dividends have been paid out of the actual earnings of the company, besides the writing off 19,600*l.* The prospects of the company are brilliant indeed.

July 2. A SHAREHOLDER.

RICHMOND CONSOLIDATED MINE.

SIR,—Professor Price in his report of June 1 on the Richmond Mine, which he inspected about May 1, estimates that the ore in sight is of the value of 1,393,606*l.* sterling, and he puts the profit value at 677,689*l.*, which, with cash in hand and reserve fund, makes a total of 712,689*l.* Thus the developed ore, with cash in hand, makes each 5*l.* share worth something over 13*l.*, outside of which there is, as you remarked, the prospective value of the original and acquired properties, which Prof. Price reports as "most encouraging." Let shareholders bear this in mind, and not part with their shares at any price without weighing in their minds the value of the prospects. If the past may be taken as an indication of the future, the value of each share is worth double the figure I put it at. Whether Prof. Price is the managing agent of the Blue Tent Mine, in California, or who he is, I do not know, but at any rate we know he was selected to report upon the Richmond by Mr. Probert, in whom we have every reason to place unlimited confidence, not only as regards his judgment, but also with regard to his probity.

SHAREHOLDER.

EBERHARDT AND AURORA MINING COMPANY.

SIR,—At the late meeting of the Eberhardt and Aurora Mining Company the Chairman stated that at the next meeting a dividend would be declared "which would be very satisfactory." It must be recollected that at the next meeting of the company, to be held four or six months hence, the accounts to be taken into consideration will only be made up to the end of this month, when there can only be a very small cash balance. How, then, can a dividend be declared out of the profit of the half-year? I write this letter for information, and I do not at all deny that very satisfactory dividends may be paid after this year. H.

P.S.—It must not be forgotten that at the meeting last year of the Eberhardt and Aurora Company a like promise of a dividend was made.

June 29.

CHONTALES—JAVALI.

SIR,—In making a few remarks on your correspondent "Investor's" letter, in last week's Journal, I find that the Javali crushed only 552 tons in the month of April, at the same time having at their command steam power equal to driving 20 stamp-heads, or reducing (say) 1500 tons. How can this be confirmatory of your correspondent's views of the relative values of the two mines, when, doubtless, he expected a much larger return? As to his remarks, Fiction *versus* Facts, the facts stated in my two former letters, I maintain that the whole of the statements made are undeniably correct; and in respect to the fictitious part I refer your correspondent to his letter of June 5, when he will have an opportunity of reading the fiction emanating from himself in reference to the returns of the Chontales Mines, basing his calculations upon a portion of a year, and that portion which is interrupted to some extent by the dry season, that a net profit of 3589*l.* on the workings for the year 1874. He admits the fact, and adds, there is not much in that set of facts to make a noise about. I ask the question, who is it that is making a noise? and whether "Investor," who feels disappointed with the public for their want of appreciation of the Javali shares, is justified in the unwarrantable attack he has made upon ours. Then follows an exhibition of your correspondent's refinement, "Inserting stuff about what may be expected." I refer him to my letter in your issue of June 12, in which he will find no estimate as to returns has been made, but the number of stamps stated available at the commencement of the dry season, which, by the last report from the manager, has been confirmed. As regards directors' fees, I refer "Investor" to his first letter, in which he states, "although the reports of profits made this year show a sufficient margin to meet all fixed liabilities, including the 500*l.* per annum voted to the directors," I ask him the question, who is the author of fiction in this particular?—*Bristol, June* 30. W. B. P.

CHONTALES—JAVALI.

SIR,—Your correspondent states in his last letter that I complain of writers having a tendency to over-estimate the Javali, and under-rate ours (which I still repeat is correct), and that I immediately go in largely for the same sort of thing myself. Let me remind him that whatever estimates and statements I have made I can stand by, and if he had read the contents of the *Mining Journal* of the 19th inst. carefully he would have seen for himself that I was not very far wrong in my prognostications, and I quote two paragraphs taken therefrom. The Scotch Mining Share Market article says:—"Javali, about ⅛; the returns from this mine are decidedly falling off, and it is feared it is falling back into the obscurity from which it lately emerged." The Editor's remarks on Chontales:—"Chontales, ⅛ to ¼; from the advices received this week we gather that the return of gold has very nearly covered the working cost at the mines. The pneumatic stamps are near completion, and are expected to be ready for the wet season, which commences next month. The old stamps have been overhauled and put in order, so that the manager has at his disposal with the next wet season a crushing capacity equal to 42 stamp-heads, or (say) 3200 tons of ore per month." Surely your correspondent cannot accuse me of over-etimating our property when the statements that I previously made have been so soon confirmed. As to the yield, I said that we may expect 4½ dwts. per ton in time (that is, taking the richer portions with the poorer), which, I believe, will be confirmed also. As to being up in the clouds with my tongue in my cheek when I wrote the last letter, I should have liked an explanation as to the meaning of this phrase if I had wished the correspondence in this matter to have continued, but, after what I have said, I see no further occasion for it.—*June* 30. A SHAREHOLDER IN CHONTALES.

OLD TINCROFT MINING COMPANY.

SIR,—A great deal has been written about this mine lately, and to some, I dare say, the statements have appeared rather overdrawn; and seeing the necessity of careful expressions nowadays, I have been instructed to go to the mine for a gentleman who gives me his confidence, and see what is to be seen. I express myself in my own plain way, and tell you that upwards of 200 tons of tinstuff are now at surface waiting for the stamps, which are being put up, and that the 10 fm. end was, when I was there, worth about 10*l.* per fathom. The 30 end has been varying from 5*l.* to 10*l.* per fathom. The 20 at the present point is poor. Bear in mind that these points of value are in an unfavourable stratification. This is important, for at any moment they may be out of this stratification and into the more congenial, and when that is the case a run of tin ground may be discovered, which will return all the outlay in 12 months, as the mine can be worked so cheaply. This is not all. I do not know what people are about, but for years the adjoining piece of ground has been lying idle until taken up very recently by a few persons who know very little or nothing about mining. They gave it up to a gentleman who was evidently well advised, and he, working it on his own account, is discovering a mine which I should not be surprised if it turned out another Wheal Reeth, which made 200,000*l.*, with no capital. Any person may go and see these mines for themselves, and if they do so cannot form any other opinion than I have done. They might be more sanguine, perhaps; but experience has taught me to confine myself to facts, which I have given you.

London, July 2. AN UNDERGROUND AGENT.

INVESTMENTS IN MINES.

SIR,—It has been a familiar expression of late that "Mining has had its day," but we venture to affirm that its day has not yet reached the noon of its glory. From the time when the Trojans were ignorant of the use of iron, and Homer in his immortal verse rererred to it as exceedingly precious, to the time in which we live, when ships are built of it, and even churches and houses, and it is the commonest and most useful metal in the world, its utility has been prized, and the skill and enterprise which removes the ore from the mines, and separates the metal from the ore, has been regarded with the deepest interest.

So has it been with tin from the period when Phœnicians and Jews trafficked for it on the quays of Marazion, and Solomon had the taste and wisdom to number it among the most precious decorations of the Temple at Jerusalem, to this day, when it is still yielded in the English Peninsula, and eagerly sought for in every country the geological features of which indicate its probable existence.

What is said of these two metals may be said of others, and there never was a "day" in which mining was so prominent a feature of the industry of nations, nor a source of so much wealth as the present. Only let capital be judiciously applied when liberally provided, and competent men have charge of mining undertakings, and they will prove as remunerative as ever. Only there must be an end of all random mining; geological science must take the place of the "divining rod," and local scientific investigation be made, instead of expecting tin, copper, lead, or iron to be found anywhere in a country because these, or any of them, may be proved to exist somewhere else in it.

When the prices of metals are low from over production, which seldom occurs, or from depression of general trade, which often occurs, or because trade is bad with some or all of our foreign customers, "mining men" are very apt to become despondent, and investors become timid. Whereas such occasions of depression are almost invariably followed by signal and rapid revival. This has been very remarkably the case with Cornish mining. It is depressed now, because not only has the general trade of the country fallen off, but several of our customers have had the same misfortune. This has been especially the case with the United States, which has not yet recovered from the effects of the panic last autumn 12 months. So far as this year has gone the export of tin to the Union has not been much more than one-fourth of what it was in the corresponding period last year. Nor have we sent to France anything like the half of what we sent last year within that period. Our total exports of this metal are just about half the value they were in 1874, not because we did not or could not produce it, but because our usual customers could not so well afford to pay for it.

Telegraph wire has been for some years a profitable export, but we have only sent one-third the value away since Jan. 1 which we exported from that day last year to the succeeding July.

The state of commerce in America also exemplifies our remarks as to copper, as that country has only taken a sixth this year of what it bought from us in the same period of last year; and the falling off of exports to France is also signal, although, on the whole, our copper exports have been more valuable this year.

Our lead exports, which vary very little, tell the same truth. The United States did not take an ounce from us last month, against 4800*l.* worth in May, 1874, and the value of our lead trade with that country since New Year's Day was *mirabile dictu*—11*l.*—against 24,000*l.* in the first five months of last year. This has not arisen from the trade having been transferred to rivals, but from the condition of commerce in America. It is difficult to say why our lead has not been wanting this year for Russia, which only bought from us to the extent of 5000*l.* (round numbers), against 15 times as much last year. But in every branch of business vicissitudes of this kind occur, which cannot, at all events at the time, be accounted for. There can be no doubt that the decline in the commerce of metals, acting, as it has acted, upon mines and mining, will be the means of weeding out worthless companies, and such as are not supported with adequate capital, and prepare the way for steady improvement and more profitable operations, so that the bad name which has to some extent been cast, or sought to be cast, on mining will be dispelled.

There is no difficulty in pointing out many investment now in connection with mines that are safe, and sure to be remunerative. Old Tincroft Consols, in the Lelant district, is one of these. The district itself has had a remarkable stanniferous history, as is evident from the value of the tin sold from the principal mines. Giving round numbers only, Wheal Reeth realised 526,000*l.*; Wheal Margaret, 300,000*l.*; Reeth Consols, nearly 250,000*l.*; Wheal Mary, 320,000*l.*; Providence, 429,000*l.*; Wheal Kitty, 275,000*l.*; Balnoon, 250,000*l.*, &c. There have been many of less magnitude, but where, nevertheless, the yield has been spendidly remunerative. Old Tincroft is probably one of the best progressive mines in England; it is now rapidly improving, and furnishes every evidence of a triumphant success. Capt. Pope, whose reputation as a mining captain is so well established, superintends operations at the mine, and his reports, always intelligent and reliable, confirm the highest expectations entertained of the undertaking. It is an important circumstance in connection with this enterprise that a good discovery of tin has been made in the adjoining mine—Wheal Gilbert; the distance between the workings in the two is but ¾ mile, and it is pretty clear that the lode continues rich throughout the sett. The capital of this company is so moderate that the whole may very speedily be returned to the shareholders, as in the case of Wheal Reeth, in the same district, 200,000*l.* was realised without making a call.

There are excellent tin and copper mines in Cornwall, and there are lead mines in Wales, as well as the West of England, which invite intelligent investment. St. Agnes Consols, Pennerley, West Chiverton are well-known mines, worthy the attention of the capitalist. One of the best investments lately brought before the public is the Chapel House Colliery Company. This company's property is about 14 miles from Liverpool, and is situated in one of the best manufacturing districts of Lancashire; there is, therefore, a prompt sales for all the coal that can be raised, which as there is railway communication from the pit's mouth to all the great centres of Lancashire manufacture transport can be conducted with facility and economy. Indeed, the colliery is so favourably situated that all the coal which is raised may be disposed of on the spot.

Coal mining in Lancashire is more profitable than anywhere else in the United Kingdom. The shipping at Liverpool and Fleetwood, the ironworks of Barrow-in-Furness, the mills of Manchester, Salford, Bolton, Blackburn, Preston, Chorley, Ashton, Oldham, and the Cheshire border towns, such as Stockport and Staleybridge, are insatiable in their demand for coal. It may be said to be the great source of industrial life to Lancashire and contiguous counties.

The output of coal at Chapel House is about 6000 to 7000 tons per month, and the quality is very superior. This output is not sufficient to supply the demand of the extended connection the company possesses; they are obliged to purchase from other collieries so as to keep that connection together, until they are able to increase their output by the plans for that purpose which they are carrying into execution.

There is one great advantage in connection with property in good coal mines—the shares can invariably be sold at about their original value, and generally at a profit. This arises from the greater certainty attending the valuation of such properties, the area of coal actually existing being easily determined, as is also the capital necessary to bring it up.

All things viewed in connection with the Chapel House Colliery Company, it may, without the slightest exaggeration, be counted one of the choicest investments of the day. GEORGE BUDGE.

Royal Exchange Buildings, July 1.

ANCIENT DISCOVERY OF LODES.

SIR,—Every observer must have had his attention arrested by the innumerable pitsfall and banks in his peregrinations over the barren wastes of West and not a few places of East Cornwall; and these excavations and accumulations are undoubtedly the work of the ancients. History informs us that the Phœnicians came to Cornwall for tin about 1500 years B.C. Diodorous Siculus gives the inhabitants of Cornwall and Scilly Isles the honour of being more civilised and courteous to strangers, by reason of their converse with merchants, than inhabitants of other counties and countries were. Also, he says, "These are the people that make the tin, which with a great deal of labour and care they dig out of the ground, and that being rocky, the metal is mixed with some veins of earth, out of which they dig the metal, and then refine it." The inhabitants of Wendron claim that Porkellis Moor was the first place streamed for tin, whilst the parishioners of St. Erth and St. Hilary maintain with equal zeal that Relubbus Valley was the first place searched by the Phœnicians; but the result, if known, is of but little importance save in an antiquarian point of view.

From the extract just quoted "Which, with a great deal of labour and care, they dig out of the ground" implies, we think, more than finding tin at the surface, or even in alluvial deposits, and where else could the ancients have obtained the tin but from lodes? And the question forces itself on us, by what means could they have discovered lodes or branches? That they did discover lodes is patent to all, not only from tradition and history but from observation, as modern workers in many places have cleared away the debris from the old pits, which have almost been invariably sunk on lodes or branches; and we often hear "There is not a lode west of Camborne but what the ancients worked."

Would it not be a profitable field for research to ascertain in what manner the ancients discovered lodes, especially when the deductions of reason and philosophy, with the application of science, which have done so much in determining the localities, depth of beds and seams, heights of superincumbent strata, and furnishing such a series of regulations as to make it next to impossible to be misled in coal mining, to have done so little in deciding the whereabouts of metalliferous mining, as we know not of a rule that can be applied with accuracy to the different districts (but the time is coming when an attention to an observation of, and experience in, Nature's workings in the mineral kingdom will lay down rules which will be appropriate to the working of immediate districts). Our forefathers may have traced a few lodes from the cliffs inland; the backs of others may have been exposed at surface. Costeaning, shoding, and trenching were but seldom resorted to, as we have only a few indubitable proofs, whereas enquiries and observations in different districts incline one to make the assertion that the old men were often certain to sink on a lode or branch on the first trial.

One of two surmises is evident—firstly, our forefathers discovered all the lodes; secondly, we do not know how to find them; the first of which we should presume to be false, regarding the frequent use of the proverb "There are as good fish in the sea as have hitherto been caught;" the second sounds unpleasant to the mining public of the nineteenth century, as hundreds of fathoms of ground have been sunk and driven on by the sides of cross-veins and cross-courses in this and adjoining parishes, thinking they were lodes; and we, therefore, cannot but admit, with all our boasted knowledge—and it is a knowledge which has and will turn all the products of our mines to account—that the ancients, rude and uncouth as they may have been, were ahead of us in this particular—the discovery of lodes. It could not have been that they had to undergo a course of training at a high or even middle-class school, or that they could dilate fully on the advantages and disadvantages of the Primary, Secondary, or Tertiary formations; they have left us no records as to whether or not they were fully conversant with the Meozoic, Palæozoic, or Hypozoic periods, or what system was most favourable for mineral; they do not even tell us their theory about granitic, trappean, and volcanic rocks, but this much they have told us, they know how to find lodes, and how to beat them away on a large scale if productive, as at St. Erth, where the lode is beaten away, save a few arches to water level, half-a-mile in length. Parbola, Gwinear, a place called "The Dock," from which thousands of tons of stuff must have been taken. Mr. Allen, the historian of Liskeard, mentions a place in St. Cleer, worked over a large area 8 fms. in depth. Mr. Henwood states about an excavation from the surface to 39 fms. in depth at Relistian, Gwinear, whilst the majority of their lodes and workings were, however, small. Could they have found these lodes by instinct? Physical laws reply, No. By a code of rules? A study of their works respond, No. By costeaning? An absence of pits without lodes reiterate, No. By cross-cutting? Mineralised rubbish answers in the negative. By the dial? Recent discoveries answer, No. Could lodes have been discovered by dowsing? That this practice was known to our forefathers we learn from Agricola. Pryce, the author of a work on "Mines and Mining," states that the Phœnicians left the practice in Cornwall. Mr. J. T. Rhodes, writing to the *Newcastle Chronicle* for Jan., 1875, says—"That the divining-rod has been handed down to us from the Ancient Egyptians and Persians there can be no doubt, and how long they were acquainted with the subject before the time of Moses, perhaps the British Museum, with all its ancient records, could not impart the required knowledge."

It would be a boon if we could gather the coveted and valuable information, as the desire for working old and deep mines is being supplanted for explorations in virgin ground. I should like to see the opinion of others on this subject. EDWARD SKEWES.

Gwinear, June 30.

REMARKS ON MINING.

SIR,—Mining as a source of wealth to the nation, and, indeed, to the world at large, as well as the foundation and source of many colossal individual fortunes, and as a ramified industrial pursuit, is entitled to more than ordinary consideration. It is well known that England is wholly indebted to it for the distinguished position it holds amongst the nations, and the influence it exercises throughout the world. But like every other enterprise it is and always will be subject to variations in value and patronage, both from changes within itself and from changes without. Change is the natural and necessary condition of things, and when legitimately occurring, if even adversely to our own interests personally, we do not complain with so much bitterness as when we are convinced it is the result of nefarious design on the part of our fellow-men. The machinery by which mining is operated is both complicated and extensive, as well in a moral as in a mechanical sense. Its susceptibility, therefore, of derangement is most nervous and acute, according to the mental temperament of the individuals concerned and the material consequences involved. Changes arising from the natural current of events could not ominously affect mines which were not constitutionally infirm or practically demoralised. Dolcoath and Tincroft, as well as many other mines, are instances in proof of this assertion.

But these it may be said are exceptional mines, to which I should reply that they are exceptional only in degree. Their returns have been proportionally affected with those of all others producing the same kind of ores. They by the drop which has taken place in their produce have been deprived of profits which they would otherwise have made, whilst those in less productive mines have encountered losses to which they would not otherwise have been subjected. Both have been equal losers in a pecuniary sense—one by a depreciated capital and a reduced income from that particular source, the other by actual contributions to the support of enterprises rendered dependant to a greater or less extent by the same incidental occurrence. If we look at mining from an impartial point of view we may easily perceive that it is not what it should be, but what in-

terested parties combine to make it. If there be a departure from the natural order of things an increased latitude is at once afforded for the introduction and manipulation of fictitious schemes, and the wider the departure the more difficult it becomes to define and classify them either on the ground of merit or by comparison.

Those who suppose that the deficiencies of mine agents in practical and scientific experience is the primary cause of so many failures take a very superficial view of the situation, and betray but a slight acquaintance with the exterior mechanism and the ulterior objects by which, and for which, mining is operated and made to do duty. That there are agents who are utterly unqualified to properly discharge the duties which their offices imply is a truth too pronounced and self-asserting to be disputed. But the question arises who is responsible for this defect? Why surely none but those who give them their appointments. Such selections are, no doubt, made in most cases to suit purposes other than those of legitimate mining, otherwise it is difficult to see how they could possibly have been made. When we look at the men who are associated with the administrative departments of mining, and witness, as we frequently do, their natural and cultivated shrewdness and mental capacity—comprehensive and penetrating—it is next to impossible to entertain the conviction that they cannot, and do not, distinguish between those agents of scrupulous integrity and extensive experimental knowledge, and those specious, sycophantic time servers, whose only credential seems to consist in a sort of dexterity in changing the base and shuffling the trick cards of mining instead of possessing the ability to work out the essential principles it involves. A complant from Cornwall in regard to this matter was recently expressed in the *Mining Journal*—and Wales, this part of it at least, might if required furnish a specimen or two belonging to the same category.

I am happy, however, to know that whether in Cornwall or here they form quite an insignificant and exceptional minority both of themselves and so far as numbers are concerned; nevertheless, they are quite enough to constitute a daub, if not a damaging blot, on the shield of mining. The late Mr. Ennor, than whom no one had better opportunities for observing, used frequently to speak and write of this defect, and to affirm that agents who distinguished themselves only after repeated experiments in producing nothing but losing mines ought to be distrusted and treated accordingly. But this view, without some qualification, would not be likely to receive a very general endorsement, although it contains a strong germ of truth. I look upon this regretable feature in mining as the effect of other causes, and in the chain of events as the cause of other effects. If the concatenation of cause and effect extends from its primary to its ultimate individual link in the system with which it is connected it cannot be otherwise; and, therefore, according to the nature of the causes will be the effects produced. I am led to conclude from observation and facts that at least some parts of Wales have suffered more in this respect than Cornwall has proportionally, and I should be very glad if I could say that it was now a thing of the past, but I am afraid it would be premature to commit one's self to that view.

I speak in this connection in a decidedly restricted sense, and have no reference to the "diggings" of local parties, which make no pretence to either scientific or systematic mining. I state this from prudential motives, as I am aware that some former letters of mine touching on this subject caused some local irritation, which a moment's reflection, as it appears to me, would have prevented. It must be evident to everyone who has taken the trouble to look into the matter that the present depressed condition of mining is due to no one particular cause, but to a number of contributory causes. The drop in the price of tin has had a good deal to do with it, but that of itself could not have produced so wide-spread a depression. There was something which went before it, and that was the exaggerated view which was taken of the capacity and prodnct of tin mines based upon the then high price of tin. It will be fresh in the recollection of many of your readers that 3 or 4 lbs. of black tin to the ton of stuff was made the basis of estimated profits by several parties in launching their schemes, and even where steam-power was to be employed in prosecuting the mines. I need not say that that there is a limit to the tension beyond which the "cord" of mining will not bear the strain, and to force it beyond that is to precipitate a collapse. That that has occurred we all too well know, and the only good use which can be made of it is to guard the future, and it is the province of wisdom to be be so instructed.

Llanrwst Lead Mines, June 29. ROBERT KNAPP.

LUDCOTT, WHEAL WREY, AND TRELAWNY MINES.

SIR,—One is often surprised—nay, astonished sometimes—to see the attempts that are made, and sometimes with success, to revive old exhausted mines, such as Great Wheal Vor, Great Wheal Alfred, East Crinnis, Godolphin, Old Towan, &c. And it really is surprising to see that an attempt has lately been made to waste money in a re-working of the mines named at the head of this letter, but what is most surprising of all that Liskeard men should be so unwise as to sanction such a move, when the sum of 10,000*l.* is to be paid out of the capital, if raised, to a London broker for promotion money. The proposition to work the mines at all is absurd, but to think of paying 10,000*l.* for such mines is indeed the height of folly. Why should the broker have such a sum? The mines are dear at a gift. If a company would put up all the requisite machinery, and hand over the mines to me free, I would not accept of the gift, and be obliged to work any longer than a mortgage of the materials would supply cash to pay costs. It appears that the chief argument used for this proceeding is the benefit that Liskeard people would derive from the working of these extensive and expensive mines; but is it reasonable to expect disinterested capitalists to embark their money in a non-paying concern, merely to benefit the merchants and labourers of Liskeard and the district? I am not surprised that the thousands of prospectuses sent out should have brought no responses. The fact is the mines will not pay, and I suppose that people in general are awake to that fact. The man who can ask a premium of 10,000*l.* for such so called properties must be a bold as well as a selfish being. The proposition to wind-up made at the late meeting was a good one, but how foolish to take such a scheme in hand at all. It seems that the Liskeard people who subscribed for shares will have to pay the costs incurred, which will be found pretty heavy, I dare say. I suppose that the broker will be free from liability. No doubt he took care to keep himself harmless.—*Callington, June* 29. OBSERVER.

WHEAL WREY, LUDCOTT, AND NORTH TRELAWNY.

SIR,—In all the category of mines or the annals of mining experience has there been shown such an instance of folly of the directors proceeding to allotment as has been verified here at any risk, in order to recoup themselves any outlay which may have been made, and such a limited amount of capital only subscribed; for, according to their own showing, they have only 6000*l.* out of a capital of 40,000*l.*, which, if I am rightly informed, is barely sufficient to pay the preliminary expenses, say nothing for the engine purchased by the promoter, and transferred over to the company, awaiting removal as soon as paid for, until which it remains a fixture at Wheal Mary Ann, where it last worked, nor do I see the remotest chance of sufficient capital being subscribed. If the whole amounts were fully paid up, they would require it to commence these mines fairly. It is also well-known in this district that Wheal Wrey and Ludcott were worked to a great depth, and abandoned for their poverty, after being thoroughly inspected by two of the best agents in Cornwall. North Trelawny made calls the whole of the time it worked. There is also great dissatisfaction existing here among the local shareholders by the way in which they were induced to take shares, and the directors thus proceeding to allotment, and it is in contemplation to file a petition in the Stannaries Court, or take some other means as may be advised legally to have it wound-up from insufficiency of capital and other causes to be explained.

Liskeard. A VICTIM.

LITERARY PIRACY—PLATTNER'S MANUAL OF BLOW-PIPE ANALYSIS.

SIR,—In the advertisement of Messrs. CHATTO and WINDUS, in to-day's *Times*, the following extract is given, apparently from a critique in the *Mining Journal* upon one of the works lately published by that firm, entitled "A translation of Plattner's Work on the Blow-Pipe," by Hugo Cookesley, &c.:—"By far the most complete manual upon a science which is every day growing more important," or something to that effect. If you really wrote those words you could not have been aware that the so-called "translation" is a mere copy of the truly laborious and most praiseworthy translation of the immortal Plattner's work, by Prof. H. B. Cornwall, published in New York in 1872, only that, apparently to prevent the work from being detected as an exact copy, the heading of each article, which in Plattner is devoted to the formulæ and localities, &c., of minerals relating to the latter, is omitted. You can thus judge how much correctness there is in the assertion into which you have been betrayed by Messrs. Chatto and Windus, that Mr. Cookesley's copy is "by far the most complete manual," &c.

It is evident that Mr. Cookesley neither understands German nor the science about which he has pretended to give us a "translation," from the only part (about a quarter of a page) where he has ventured upon anything original, which is a wretched description of a still more wretched figure of the "Geblase," or Freiberg blowing-machine.

Although we have as yet no copyright treaty with America, the Americans as well as those Germans interested in the matter are justly indignant at this mean act, which is quite unworthy of a respectable publisher; and Messrs. Churchill and Co. (who hold the copyright of the *English* translation of Plattner) should teach Mr. Cookesley in a court of law that his ignorance (as expressed in his preface) of any *previous* translation (Dr. Sheridan Muspratt's having gone through several editions) would not, whether assumed or no, avail him.—*Midfearn, Shepherd's Bush, July* 1. W. A. ROSS.

[Mr. Ross cannot have read in the *Mining Journal* of May 15 of the present year a review of Messrs. Chatto and Windus's reprint of Prof. Cornwall's translation of Plattner, or he would have known that in such matters we are not so easily betrayed. The quotation which Mr. Ross refers to as having been given in the *Times* is unjustifiable, because garbled; nothing whatever was stated in the Journal commendatory of the reprint except as a cheap (or probably cheap, for we did not know the price) substitute, the inferior style of printing, &c., suggesting that it could only be intended for sale at a very low price. As it was not supposed that Mr. Hugo Cookesley was other than the mere instrument in the matter, like the apothecary consulted by Hamlet, that gentleman's name was not mentioned in the review, although it necessarily appeared in the foot-note giving the title of the book. The review commenced by stating that—"The translation by Prof. Cornwall, of Columbia College, New York, of Richter's last German edition of Plattner's Manual of Qualitative and Quantitative Analysis of the Blowpipe was announced some time since in the *Mining Journal* (it was reviewed in the Journal of June 29, 1872), and an English edition has now been issued," &c. A few lines further on it is said—"That Plattner's Manual is by for the most complete work extant upon a subject both of growing practical importance and of extreme interest will not be denied, and that the revisions and augmentations of Prof. Richter did much to render the work complete is acknowledged both in Europe and America."

Again, "From the time the late Dr. Muspratt's translation of Plattner was published the practical value of the work has been generally acknowledged by those who read the English language," &c. There is thus no ground for complaint that the labours of either Muspratt or Cornwall were ignored, and Mr. Cookesley is most desirous that his connection with the matter should be ignored. The use of his name on the title-page was, as he assures us, a mere matter of bargain, he being the seller, Messrs. Chatto and Windus the purchasers; and if he now finds that he has underestimated its value he must be careful to get a better price next time. The letter and notice of Mr. D. Van Nostrand, of New York (the publisher of Prof. Cornwall's translation), in the Supplement to the Journal of June 5, should, in justice, be appended by Messrs. Chatto and Windus to any other extract they may make from the *Mining Journal* review. No respectable American publisher reprints piratically, notwithstanding the absence of International Copyright law, and there are scarcely six houses in the Union who do so, whilst the standard of trade morality in this country is much the same. With regard to the last part of Mr. Ross's letter, Messrs. Churchill would have no cause of action against Mr. Cookesley, since he has translated nothing, and no court of law would prevent a man selling his name any more than they would prevent him dealing in any other commodity; it is, moreover, very doubtful whether Messrs. Churchill's proprietorship of Muspratt's translation would give them control over the translations of Richter's extension of Plattner. Where an inventor sold an invention, "and all improvements which he might thereafter make upon it," the Court of Chancery held that it was an agreement that the Court would not enforce, and Messrs. Churchill's case appears to be very similar.]

[For remainder of Original Correspondence, see to-day's Journal.]

Meetings of Public Companies.

CENTRAL SWEDISH IRON AND STEEL COMPANY.

The fourth ordinary general meeting of shareholders was held on Wednesday, at the London Tavern,

Mr. THOMAS BAGNALL, jun., in the chair.

Mr. C. T. MOORE (the secretary) read the notice calling the meeting. The directors' report was taken as read.

The CHAIRMAN said it was due to those interested in the company that he should make a few remarks. He could hardly suppose that anyone would be so sanguine as to expect profits in the iron trade during the year 1874; at the same time, when the shareholders looked over the accounts, and saw the considerable sum of loss, no doubt it gave rise to rather disagreeable feelings, but he trusted the explanation given of the loss would be considered satisfactory. The accounts of other iron companies, and also the failure of some other iron concerns, was a proof of the bad times through which they had been passing, and on this subject he would read an extract from a speech delivered by Mr. Williams (Messrs. Bolckow, Vaughan, and Co.'s manager) on May 4, at a large conference of ironmasters:—"I speak for a firm which is as well situated as the very best in the Cleveland district a firm raising its own materials from the first commencement, and selling them in the shape of finished iron—and the whole result of their extensive operations in the manufacture of raw iron (and I say it here solemnly before you) is a heavy loss for the last 18 months. I am not assuming to speak upon the point of the separate profit of iron and coal raised, but from the very beginning to the end. The actual money paid out for wages and materials, and the total amount received for the finished iron produced, if divided by the number of tons of finished iron made, the result would give us a price per ton received much less than the actual cost. This state of things must have been at least as oppressive to our neighbours, and it is only because the position of Bolckow, Vaughan, and Co. is a strong one, that looks to a good average profit for an average of years, that it has gone on with this unremunerative trade. The limit, however, to which that policy can be allowed to go has been very nearly reached—in other words, notwithstanding all the experience, scientific skill, and knowledge which had been brought to bear upon the iron trade, it had really proved unremunerative to capitalists." This company had lost money also upon its pig-iron; he did not charge the furnaces or the management with that loss, it was simply a matter beyond the directors' control. In addition, a great part of what appeared to be loss was caused by the alteration of the date of the accounts. In the last report the auditors explained that when the alteration was made it would make the accounts look bad, from the simple fact that during the time the alteration was being made it excluded just the harvest time of the forest, when charcoal which had been burned was drawn down to the works and measured into the books. In future the accounts would be made up to Dec. 31 in each year. At the last meeting the directors took authority to borrow 25,000*l.*, but they only succeeded in getting about 8000*l.*; preliminary arrangements were made for increasing that amount in the spring, but all at once, in consequence of the failures (particularly of a house connected with Sweden), negociations failed, and the directors had to call the shareholders together in London, and the result was that the directors obtained a temporary loan of 15,000*l.* to carry on the business. A good deal of the money borrowed in Sweden was upon temporary loans, which was very inconvenient, because the money often fell in just at the time when the money market was tight. The 25,000*l.* asked for was simply to take up these temporary loans.

Mr. THOMPSON asked whether the mortgage of 50,000*l.* was included in the sum required to be paid off?——The CHAIRMAN said it was not; it was a permanent mortgage, and ¾ per cent. of the interest went to the redemption fund. When the large shareholders to whom he had referred met together they wished to place gentlemen on the board who held a larger stake in the company; all the directors offered to resign, and three new directors were placed on the board—Sir Cecil Beadon, Mr. Burnand, and Mr. Keyser, and Mr. Dudgeon and himself were the only two old directors who remained. In future it would not be necessary to keep such a large store of ironstone at the works, as the railways which were now being brought towards completion would enable them to take up ironstone at any period of the year. There was an item in the accounts which looked formidable —1960*l.*—for exploring, but he was happy to say that a large quantity of ironstone had been raised from the mines belonging to the company. Those mines were handed over to the company at a royalty, and in a report which had just been received from the manager they were well paying their expenses, and giving a supply of ironstone ranging as high as 60 per cent., and averaging between 50 and 60 per cent. of ironstone. He moved the adoption of the report and accounts.

Mr. A. J. DUDGEON seconded the resolution, and said the company had passed through an exceptionally bad period, and the iron trade had been far from satisfactory. He thought, on the whole, they might congratulate themselves that the loss was not larger than it was. He pointed out the absolute necessity of raising money, as 15,000*l.* would be due in October next, and some arrangement must be made.

Mr. THOMPSON asked how it was that three gentlemen had been added to the board without the knowledge of the general body of shareholders?——The CHAIRMAN said that the directors had power, under the Articles of Association, to fill up any vacancies at the board between the periods of the general meetings.

Mr. THOMPSON asked whether the three gentlemen so elected held shares in their own right previous to being elected members of the board?——The CHAIRMAN said Mr. Burnand held shares in his own right, the other two gentlemen, who represented several large holders of shares were qualified before they were elected. There were certain parties who advanced money to the company, and they asked that they might be represented. He could not see what injury was done, or what was the object of Mr. Thompson in making the remarks.

Mr. THOMPSON said he thought that such a course was calculated to destroy the confidence which ought to exist between the directors and shareholders.

Mr. BOYD said he totally differed from the last speaker; he thought the change which had been made in the direction was a desirable one, and that it was calculated to benefit the company. The directors seemed to have acted entirely within the powers given them by the Articles of Association.

Sir CECIL BEADON, K.C.S.I., one of the new directors, said that he represented a company who was interested in a large number of shares in this concern, and he presumed the directors invited him to join the board from that circumstance.

The SOLICITOR stated that what had been done was entirely in accordance with the Articles of Association, and also with the full concurrence of several of the largest shareholders, who had met together and taken the subject into consideration.——The resolution was then put and carried.

The CHAIRMAN next moved that the directors be authorised to issue debentures to the extent of 40,000*l.*, carrying interest at 8 per cent. per annum, the principal to be re-payable at five or seven years, at the option of the lenders.——Sir CECIL BEADON seconded the resolution.

Mr. THOMPSON thought that the attempt to carry on a company like this on borrowed capital at 8 per cent. would not be successful. He believed it would have the effect of bringing down upon the company its creditors in Sweden, and that the property would, piece by piece, fall into the hands of the Swedes.

The resolution was then put and carried.

On the motion of Sir CECIL BEADON, seconded by Mr. KEYSER, Mr. Thomas Bagnall, jun., was re-elected a director. Messrs. Gane and Jackson were then elected auditors.

The meeting was then made special, and a resolution was passed altering clause 138 in the Articles of Association by omitting the word "three" in the fifth line, and inserting the word "six." This alteration is rendered necessary in consequence of the alteration in the time of making up the accounts.

The meeting then adjourned.

THE GLENARIFF IRON ORE AND HARBOUR COMPANY.

The second annual general meeting of shareholders was held at the offices of the company, 36, Walbrook, on Friday, June 25,

Mr. WM. MCCANDLISH in the chair.

Mr. JOHN HAM (the secretary) read the notice calling the meeting; the directors' report was taken as read.

The CHAIRMAN: Gentlemen, I beg to move that the report and accounts be received and adopted.

Mr. O. B. SHORE: I beg to second that.

The CHAIRMAN: I do not think I have very much to add to what you will find in the report. The directors, who are very large shareholders in the company, are as disappointed with the state of the company at this moment as any of the shareholders can be, but two causes have combined to place the company in the position in which it stands. One is alluded to in the report—the unfortunate storm, which injured our pier; and the other is the very exceptional state of the iron trade, which makes it difficult to find such a market for our ore as we always hoped to find even in the worst of times. However, as to the pier, we have repaired that, and within a very few weeks we hope to complete all that we propose to do, and we shall then possess our works and pier in perfect order for the shipment of any quantity of ore. As to the state of the iron market, we cannot tell how long this great depression may last; but we must hope that things will gradually mend, and that we shall benefit from that from day to day. The shareholders will hear with great satisfaction that we have induced our landlord, Lord Antrim, to grant a substantial modification of the terms under which we hold our lease. Within six weeks, or two months at the outside, our expenditure with regard to capital will be at an end; as to our outlay after that time we shall be guided by the state of the market. The shareholders will see that, owing to the causes set forth in the report, we have been obliged to expend a considerable sum in excess of the amount realised on the shares, and that amount so far has been found by the directors themselves. They propose to issue debentures, and as the directors consider they will be exceedingly good securities we hope the shareholders will come forward, and take at least each his proportion. I do not know that I have anything to add, except that I shall be happy to give any explanations on any point you desire.

No questions were asked, and the resolution was put to the meeting and carried.

The CHAIRMAN: In reference to the issue of debentures, I have now to move—"That this meeting having been informed that the directors are about to exercise the borrowing powers given to them under the Articles of Association, by the issue of debenturers of the company, bearing interest at 8 per cent. per annum, to the amount of 30,000*l.*, hereby approve the same."

Mr. O. B. SHORE seconded the resolution, which was put and carried.

The CHAIRMAN: Two directors retire in accordance with the Articles of Association, Mr. Begbie and myself, and we offer ourselves for re-election.

Mr. H. WARING moved the re-election of Mr. McCandlish.

Mr. GEORGE BATTERS seconded the resolution, and said they could scarcely have tided over their difficulties but for the almost herculean efforts of their Chairman. There had been many difficulties to contend with, amongst others the injury to the pier and the depressed state of the iron trade; but he believed that there was now an excellent chance for the shareholders, and that they would be rewarded for their patience. He pointed out the cheap figure at which this company could put iron on board the vessels as compared with almost every other company, and said that such being the case, if other companies could live in these times this company should be making a profit.——The resolution was put and carried.

On the motion of Mr. HENRY WARING, seconded by Mr. G. BATTERS, Mr. Begbie was re-elected a director.

On the motion of Mr. SHORE, seconded by Mr. BEGBIE, Mr. I. V. H. Irwin, who had resigned his seat in favour of Mr. Waring, was elected an additional director.

Mr. IRWIN acknowledged his election, and before sitting down moved that Mr. John Ball, of the firm of Messrs. Quilter, Ball, and Co., be elected auditor.

Mr. GEORGE BATTERS seconded the resolution, which was put to the meeting and carried.——On the motion of Mr. GEORGE BATTERS, seconded by Mr. BEGBIE, Mr. Thomas Ronaldson was elected an auditor on behalf of the shareholders.

On the motion of Mr. G. BATTERS, seconded by Mr. O. B. SHORE, a vote of thanks was passed to the Chairman.——The CHAIRMAN, in acknowledging the compliment, said he hoped that at the next meeting the directors would be able to present a much better report to the shareholders.——The meeting then broke up.

CANADIAN COPPER PYRITES AND CHEMICAL COMPANY.

An extraordinary general meeting of shareholders was held at Glasgow on Tuesday,—Mr. JAMES MORTON in the chair.

Mr. J. R. CUNNINGHAM, jun. (the secretary), read the notice convening the meeting, and the report of the directors was submitted:—

The directors feel it necessary to advert to one or two paragraphs of the committee's report which was read at last meeting. The statement of the committee as to the original directors of the company requires some correction. Mr. John Swanston Wilson was in Canada at the time of the formation of the company, and it was not till after his return to this country that he took any part in the direction, the first board meeting at which he was able to be present being that held on Oct. 2, 1872. He cannot, therefore, be held responsible for anything that was done prior to that date. Mr. Wilson also desires it should be stated here that he neither received nor was ever offered or promised any payment in money or otherwise in consideration of his agreeing to become a director of the company. The chairman of the company, from its formation in July, 1872, till April, 1873, was Mr. Chas. M'Lean, of Glenearn, Perthshire. His name is left out of the committee's report, and it does not appear from it he was a director, although he was in the position of director and chairman of the board for the nine months in question.

It is explained that the vendors did not introduce Messrs. Ritchie, Morris, and Rose, the Montreal solicitors, to the board. That firm was known to the directors previously, and Mr. Charles M'Lean, the chairman, who, from his Canadian connection, was well qualified to know them, spoke in high terms of them. The firm is one of the principal law firms of long standing in Montreal, and is of the best prestige. Sir John Rose, their late partner, was Financial Minister of Canada, and Mr. Ritchie is a director of the Bank of Montreal—one of the best banks in Canada. No proper returns were sent home by Mr. James Taylor, the company's first manager, and that gentleman's delay and refusal to send such returns was the first cause of dissatisfaction, which ended in his recall. When Mr. Macfarlane entered upon the management in June, 1873, he found the counting-house department in the greatest confusion, and some time necessarily elapsed before order could be established. Since then the financial returns and the reports on the mines have been sent home regularly, and, on the whole, satisfactorily, with the exception of the quantities and values of the stocks of ore on hand. The directors have recently become aware that these stocks had been seriously over-estimated in the two previous years. The directors are entirely at a loss to account for the errors in question, but Mr. Breen has been instructed to thoroughly investigate the matter.

With regard to the returns from the metal extracting works, the directors acknowledge that until recently these have not been very reliable under the head of copper ore treated. It must be borne in mind, however, that this company's attempt to work the wet extracting process in Canada was an entirely new experiment, and was made under conditions of climate, fuel, &c., very different from those which occur in this country. It is not to be wondered at, therefore, that many serious difficulties were encountered, and that many months elapsed before they could be overcome. It was mainly on account of these difficulties that Mr. Henderson undertook, at the request of his co-directors, to visit Canada last year, and assist in placing the works in proper working order. Since then, and under the management of Mr. Chadwick, much progress has been made, and the directors are pleased to state that all difficulties in the way of working the process have been satisfactorily overcome. But whilst these difficulties lasted the returns were not so full and accurate as they would otherwise have been.

Mr. Breen is endeavouring to find a market for sulphuric acid and iron ore residues, and thinks they can sell the sulphur of their ore in New York, the present supply being derived from Sicily at a heavy cost. The directors regret that the accounts are so unsatisfactory. They show a loss of 29,979*l.* 2s. 5d. Notwithstanding the present very unfavourable aspect of the company's affairs, the directors still anticipate that something will be made off the sulphur of the ore, and a good profit off the copper, when a revival in trade takes place. Mr. Breen, who went out to Canada in November last, is still there, and is actively engaged in pushing forward the company's operations, and in investigating the question of utilising the sulphur.

The SECRETARY also read a report by Capt. Whyte, who had been instructed to inspect and report on the company's mining properties in Canada. The report gave minute details with regard to the Hartford, Capel, Belvedere, Clark, and Sherbrooke Mines, and concluded with the following statement:—"The above are all of your properties in the Capelton district, or that I have any personal knowledge of. With the exception of the Hartford, and, to the extent mentioned, the Capel Mine, none of these properties have ore in sight that could by any possibility be made to pay the cost of extraction. Some of them look hopeful. In particular, I would again mention the Bolton properties and the Sherbrooke Mine, and recommend them as being worthy of further trial."

The CHAIRMAN having corrected some mis-statements in the committee's report, said that with regard to his own personal connection with the company, the great success of the Tharsis Company, and the fact that Canadian pyrites was richer in copper, though less rich in sulphur, made him conclude—when the company was proposed to be formed—that there was a high probability of its being successful, and of the business being even very profitable. Hence he and his family were induced to take a large interest in the company—to the extent, indeed, of 13,500*l.*—and he agreed to become a director. As a director he had faithfully performed the duties to the extent of his ability, having attended 100 meetings, each of them, generally speaking, occupying a considerable time. This was done latterly at much personal inconvenience, but he felt he had a duty to perform to the shareholders, and therefore his strong desire to be relieved could not be gratified. He had not received from the company—nor did he wish to receive—any remuneration for his services. (Applause.) As explained at the last meeting, he agreed to receive 1000*l.* from the vendors for aiding in the formation of the company. He (the Chairman) might be allowed to mention the circumstances under which this was agreed to. The vendors, on the face of the prospectus, were to receive a bonus which would amount to the sum of 50,000*l.*, and it was provided that

the company were not to be entitled to enquire into the application of this sum. The 1000*l.* was not to be paid from the funds of the company, but out of this sum, and it bore but a small proportion to the interest he was taking in the company. It seemed to him at the time not unreasonable or improper that he should accept it, on the footing that he was to give his services in the formation of the company, and to serve on the board for some time without other remuneration. But the evil was that this was not openly stated in the prospectus. Not long after, when better views were beginning to prevail as to the duties of directors, he wish the act undone. But the question was, to whom ought the restitution to be made? To the vendors from whom the sum came? or to the company from whom it did not come? After last meeting he consulted Prof. Robertson as to what he should do in reparation of his mistake, and that gentleman advised him that, although the sum did not come from the company, it should be handed to them, because it was as a director he had received it. He had, therefore, handed over what he received to the company, and he had now the satisfaction of feeling that neither in connection with this nor with any other company did he possess any money or anything whatever for the promotion and formation of public companies. (Applause.) The Chairman concluded by stating that at last meeting the directors presented their resignation, but they were induced to take office up to the present date. He now formally tendered the resignation of the board.

Mr. MORTON was unanimously re-appointed Chairman of the meeting.

Mr. HENDERSON explained that with regard to Mr. Taylor he knew that that gentleman had held appointments as chemist at their works in Millwall, and as manager of an artificial manure work in England; that he had been in America establishing works there; and also that he had been manager of a large work near London, and of Messrs. Vivian's works near Swansea. He introduced him, however, to Messrs. M'Ewen and Huntington when the company was projected, and suggested that he should be secured as practical manager at a reasonable salary, and that he should receive as a principal inducement some of the paid-up shares, so that his real payment might be out of the profits of the company. At a meeting of the proposed directors of the company, held on July 26, 1872, he vehemently opposed the appointment of Mr. Taylor as managing director at the absurd salary of 3000*l.* a-year and expenses. His views were not supported, and his only regret now was that he did not retire like Mr. Poynter, who knew a great deal more of Mr. Taylor than he did. Then he strongly complained that the committee of investigation had greviously misstated what he had said to them with regard to the 1000 paid-up shares in the company which stood in his name upon the books. When questioned in a very rude manner in a public meeting by Mr. M'Brayne as to how he became possessed of these shares, he declined to answer, because he could not explain without doing possible damage to others. In private he produced proofs to the committee that on Nov. 30, 1872, he bought from certain brokers in Glasgow 1000 shares, at 4*l.* per share, to assist Mr. M'Ewen, and that it was not till March 3, 1873, that the 1000 paid-up shares were transferred to him (Mr. Henderson). At the time he paid the 4*l.* for these shares he could have bought them in the open market at from 40s. to 42s. He originally subscribed for 1000 shares, and his immediate relations, for whom he was responsible, for 670 more, so that he held now, and had held since 1872, 2670 shares, for every one of which he had paid 7*l.* per share, and all these shares were worthless unless he could make the concern pay. He could conscientiously say that amid many and serious defections from the board he had given a large portion of his care to the interests of the company, and all without fee or reward—it would appear even without thanks. It was quite true they had not yet been able to bring the affair into a paying state, but during the last few months they had been making a profit, and the process worked in a very satisfactory manner. They were making a profit from copper alone, wasting their sulphur, and also their iron ore residue.

Mr. TAYLOR characterised the statements by Mr. Henderson with regard to himself as a tissue of misrepresentations. Without going into details, he might say that it was Mr. Henderson who induced him to become managing director; it was Mr. Henderson who offered him 1000 free shares; and it was Mr. Henderson who proposed the remuneration to be given him, although, very singularly, at the first meeting he and the vendors were the first to say that it was too much. This whole matter, however, was now before an arbiter, so that it was not desirable for him to go into it at greater length.

The CHAIRMAN said with regard to the statement of Mr. Taylor that Mr. Henderson proposed that a salary of 3000*l.* should be given to him, he could state from perfect memory on the subject that that was not true. Mr. Henderson strongly opposed such a sum being given, and it was because he was over borne that the sum was given.

Messrs. G. Wilson, W. Berry, W. Frew, and R. Henneker were elected directors, and Mr. WILSON then stated that his connection with the board was of the most negative and neutral kind so far as the prospects of the company were concerned. If he believed there was no hope of any good coming out of the concern he would not accept the appointment, but he could not profess to share the sanguine expectations held in some quarters. A proposal would be made shortly for a reconstruction of the company, with a certain diminution of the amount of the shares, though not going so far as had been suggested—to extinguish that liability altogether. At that meeting he would state more fully the terms on which he had agreed to become a director.

The meeting then separated.

SOUTH DARREN MINING COMPANY.

A general meeting of shareholders was held at the offices, Austinfriars, on Thursday,—Mr. JARDINE in the chair.

The notice convening the meeting was read, and the minutes of the last meeting confirmed.

The report was read, as follows:—

June 29.—We beg to hand you the following report of this mine for the general meeting, to be held on the 1st inst. In the first place, we wish to observe that we have not progressed with the driving of the 90 and 80 levels as fast as we could wish, owing chiefly to the pumping-wheel being frozen up in winter, and the short supply of surface water during the summer, which caused operations at the 90 and 80 to be suspended for a time. However, we are glad to say that the mine is again clear of water, and the driving and stoping at the 90 have again been resumed by a full force of men. The lode in the 90 end west is 3 ft. wide, composed of a dark clay-slate, carbonate of lime, copper, and lead ores; present value, 40*l.* We may here remark that the lode at this point has a fine and masterly appearance, and of a promising character for further improvement. In advance of this end the lode in the bottom of the level above (the 80), for about 45 fms. in length, was valued at from 10*l.* to 30*l.* per fathom, which looks encouraging, as the ground in the 90 is being opened out. The lode in the 80 end west is rather small at present, owing to a cross-measure of ground previously passed through, but, from the general appearance of the lode in the end, the channel of ground in which the lode is now embedded is precisely of the same character as that in which the lead is being found in this mine, and we, therefore, hope soon to make a discovery of value at this point. As stated above, we have passed through a course of ore worth 10*l.* to 30*l.* per fathom in this level for 45 fms. in length. The lode in the 70 end west is 2½ ft. wide, containing a dark clay-slate, carbonate of lime, copper and lead ores, valued at 30*l.* per fathom, with every prospect, from its appearance, of further improvement as the ground is being laid open. The lode in the stope over the 90 west is 3 ft. wide, worth for lead and copper ores 18*l.* per fathom; from the appearance and character of the lode over this point we are of opinion that the lode will improve as we go up. There are five other stopes being worked in the mine, the lode in which is 2½ ft. wide, and worth on an average for lead and copper ores about 13*l.* per fathom. We would advise the present points in operation to be carried on by a full force of men in each bargain, and to carry out the foregoing work it will require from 250*l.* to 300*l.* per month, against which, from prospects, we estimate the returns, including lead and copper, at about 300*l.* per month, or until such time as a greater length of ore ground is being opened out in the 90 and other levels, provided the machinery were kept going either by water or steam power, so as to enable us to keep the mine clear of water. In conclusion, we beg to say that, looking at the locality of the sett, which is good, and the appearance of the lode in the bottom level, which has much improved, we can but highly recommend that a further and spirited trial be given to this adventure, and it is our strong opinion that profitable results will follow.—JOHN BOUNDY, W. H. BOUNDY.

The report and accounts were received and adopted.

Capt. BOUNDY, in reply to questions, stated that the next sale of ore would be made in about three weeks; the last was estimated at 296*l.* for lead and 99*l.* for copper, but he had no doubt it would be a little over that when weighed off.

Mr. MURCHISON mentioned that at a subsequent meeting a scheme would be propounded for the raising the necessary additional capital, probably by reconstituting the company. About 9000*l.* was the amount at present suggested to pay off the liabilities and leave adequate working capital for the further development of the mine. Each shareholder would, of course, be offered a *pro rata* interest, though one of the directors was ready to take all that might be left.

The retiring directors and auditors were re-elected.

A vote of thanks to the Chairman and directors closed the proceedings.

ROOKHOPE VALLEY MINING COMPANY.

An extraordinary general meeting of shareholders was held at the offices of the company, Austinfriars, on Tuesday,

Mr. ROBERT WILSON in the chair.

The notice convening the meeting having been read,

The CHAIRMAN said that two months since a meeting was held, when the directors were requested to borrow 4000*l.* on the security of the property, but up to the present time there had been only 1350*l.* applied for. The liabilities were 1522*l.*, and the total assets, including the last sale of ore, 273*l.*, and the lords were pressing, so that unless the necessary money were subscribed forthwith there was no alternative but to pass a resolution to wind-up the company. Attempts had been made to obtain advances upon the security of the machinery, plant, &c., but the negociations had not resulted in any successful issue.

Mr. DOUGLAS asked whether steps had been taken to obtain an estimate of the value of the mine, and whether upon that valuation a loan could not be got by paying a liberal interest?——The CHAIRMAN said that Mr. Blenkiron had valued the machinery, plant, &c., at 2500*l.* to 3000*l.* at a low valuation. This did not include the mine.

Mr. DOUGLAS said the report of Mr. Blenkiron, circulated in October last, showed the mine to be capable of returning 80 to 100 tons of lead ore per month. Before deciding upon winding up a valuable concern a further effort should certainly be made to obtain a loan upon the materials, &c. No shareholder would wish to wind-up such a mine as this. If the present company were to wind up other people would only be too glad to have the opportunity of coming in to reap the benefit of the expenditure incurred, and participate in the profits of a good mine. There was one matter to which he referred with some degree of delicacy—the directors' fees; they had received a large amount, while the shareholders had not received anything.

The CHAIRMAN said the directors had not received any fees for 12 months. At the beginning of the present year a resolution was entered on the minute-book that in future they would take only one-half the amount provided for in the Articles of Association. The total liabilities, not including directors' fees, was 936*l.*—if the necessary amount were subscribed to carry on the mine the directors were willing to forego their fees owing to them.——In answer to a question, the CHAIRMAN stated that the 1350*l.* included a subscription from only one of the directors.

Mr. P. WATSON (a director) said that 80 to 100 tons a month would give a profit of at least 500*l.* to 700*l.* a month.

Mr. HILL wished to know if it were not a fact that there were other parties who were in negociation for the purchase of the mine, and who were doing all they could to prevent the money being raised?——The CHAIRMAN did not know that was the case. Mr. Blenkiron and his friends had bought a considerable interest.

Mr. MURCHISON said that Mr. Blenkiron had stated if 1000*l.* were laid out he could make the mine pay, and if 2000*l.* were laid out he had no doubt he could make the mine a permanent dividend-paying property. The fact should not be lost sight of that Mr. Blenkiron had had no control of the expenditure at the mine, it being only in February last he had been appointed—the truth was that before February there never had been a competent manager there who knew anything about the mine, the people, or the district.

Mr. HILL said what he complained of was this—he was induced to take his shares upon Capt. Arthur Waters stating in his report that no expenditure need be incurred for machinery, but directly the money was subscribed the old machinery was pulled down and new machinery put up.

Mr. PETER WATSON said it was afterwards found that machinery was required. The directors held between 4000 and 5000 shares.

Mr. MURCHISON, in reply to a question, stated that Mr. Blenkiron was the manager of one of the most successful mines in the North of England, in which something like 400 men were employed.

Mr. DOUGLAS said that every possible effort should be made to prevent the present company collapsing.

Mr. W. C. BULLER asked what it was proposed to do?——The CHAIRMAN said it would rest with the meeting what would be done.

Mr. BULLER considered it very premature to talk about winding up.

After some further discussion, upon the proposition of Mr. DAVIES, seconded by Mr. DOUGLAS, it was agreed to adjourn the meeting until Aug. 3, it being thought probable that in the meantime arrangements might be made to raise the necessary amount.——A vote of thanks to the Chairman and directors having been passed, the meeting separated.

CHAPEL HOUSE COLLIERY COMPANY.

An extraordinary general meeting of shareholders was held at the offices of the company, Palmerston Buildings, Old Broad-street, yesterday, Mr. A. G. BROOKES in the chair.

The notice convening the meeting having been read,

The CHAIRMAN said: This meeting has been called in accordance with the Act of Parliament, which requires that extraordinary resolutions passed at one meeting shall be confirmed at a subsequent one convened specially for the purpose. You have had before you for the last month the resolutions passed at the general meeting held on June 2 last, and on that occasion I entered so fully into the subject affected by these resolutions that I think it scarcely necessary to detain you with any remarks now. I shall, therefore, presently merely move that the resolutions referred to be confirmed. I shall also have to move a resolution authorising the issue of 40,000*l.* worth of debentures. The share capital issued is 40,000*l.* below the nominal capital of the company, and we only ask for authority to raise this sum by debentures instead of by the issue of the unallotted shares. We have fixed the rate of interest at 7½ per cent. because we believe that at that rate we shall get the debentures taken up. It may prove, however, that we are offering too liberal interest, and for this reason we propose asking you to give us power to issue these debentures, or a part of them, at a premium, by which course the company would obtain more funds from the placing of the debentnres than would be represented by the amount of bonds issued; thus we should pay less than the nominal 7½ per cent. for the money we may obtain. If we find this possible we shall derive the advantage arising from having raised the 40,000*l.* we require, while incurring a liability for only a smaller sum, the difference being represented by the premiums we shall obtain on the issue of any debentures above par. We propose in the first instance to offer these debentures to the shareholders at par, and we believe a very large proportion, if not all, of the amount offered will be taken up by them. In fact, we have already received from some of the largest shareholders intimations of their intention to subscribe for debentures. We shall first offer a portion of them at par, and if, when we issue a further amount, we have reason to believe we can obtain it we shall ask a premium. This would have the effect of enhancing the marketable value of those first issued, and while securing clear advantages for the company, it would obviate the confusion which might arise if two classes of debentures were issued. We propose to make them redeemable in ten years. In the course of a year and a half we hope to have completed the sinking of the new pits, and with the increased output from them our profits will be largely augmented. We suggest that fair and moderate dividends should be declared, and that a part of our profits, assisted by a portion of our debenture capital, should be devoted to meeting the half-yearly instalments of the present mortgage, which must be entirely paid off by the end of six years from the present time. After providing for dividends and all necessary payments during the next six years, we can devote any surplus profits to paying off a part of the debentures, and at the expiration of that period we can rapidly accumulate from our profits sufficient to clear off the rest of the debentures, and thus eventually leave the whole subsequent profits free for the share holders. The whole of the amount proposed may never be required, but it is desirable to authorise an issue to this extent, because it will avoid the complications and confusion which would arise from several separate issues of debentures. Moreover, the proceeds of debentures placed will be utilised, as already pointed out, for the reduction of the present mortgage, and we are not, therefore, recommending a step which will increase the company's liabilities. We believe, gentlemen, that our scheme is a wise and prudent one, and we derive no little satisfaction and pleasure from the widely-spread approval with which it has been received. I take this opportunity of expressing our hearthy thanks to the large number of shareholders who have cordially approved and supported the recommendations which it has been our duty to submit for your consideration. We have received many letters of a very gratifying nature, from among the latest of which I select one, which, perhaps, you will allow me to read as a specimen of the rest. It is from a shareholder in the North of England, and he writes—"I have gone very carefully through the report of the meeting of shareholders in the Chapel House Colliery Company, and likewise the different circulars connected with both meetings, and cordially approve the policy of the directors, particularly after such exhaustive explanations." Such evidence of warm concurrence in our views is a source of great gratification to us, because it proves that our efforts to guard and direct your interests are appreciated; and so long as we are favoured with your support we can without doubt carry on your business satisfactorily and profitably. I now beg to move that the special resolutions passed at the extraordinary general meeting of the company, held at the colliery, Skelmersdale, near Liverpool, on June 4, 1875, be, and the same are hereby, confirmed.

Mr. HARLAND seconded the resolution, which was unanimouely carried.

The CHAIRMAN, in moving the next resolution, said—I have only to say, gentlemen, that we rely upon the material support of the shareholders, and trust that you will all, in your individual and corporate interest, subscribe for the debentures which we propose to issue. For it is very desirable that the shareholders themselves should hold the debentures to as large an extent as possible, rather than that they should be held by outsiders. I now beg to move—"That the sum of 40,000*l.* be raised upon debentures of 10*l.* each, bearing interest at the rate of 7½*l.* per cent. per annum payable half-yearly, free of income tax, and that the directors be, and they are hereby, authorised and empowered to issue such debentures from time to time as may be required, and either at par or at a premium as the board may determine on."——The resolntion having been seconded, was carried unanimously.

A vote of thanks to the Chairman and directors closed the meeting.

HUNTINGTON COPPER AND SULPHUR COMPANY.

The annual general meeting of shareholders was held at Glasgow, on Wednesday,—Mr. W. HENDERSON in the chair.

The SECRETARY read the notice convening the meeting, and the report of the directors was submitted.

The CHAIRMAN, in moving the reception and adoption of the report, remarked that letters received that morning showed that rapid progress was being made at the works. The returns for the week ending June 12 showed a great advance. They were now getting through over 1000 tons of burnt ore per month. A telegram received on Tuesday showed that that rate must have been well sustained over the whole month, the make of precipitate for June being 70 tons. The loss of 13,785*l.* 7s. 11d. was more apparent than real. The directors and auditors considered it a wrong principle to carry over unrealised stocks at any value greater than cost price, and as the ore could be mined and raised at 21¼ per unit, all ores consumed and on stock had been taken at that price. That change had made a difference of 10,000*l.* on this year's account, and had been passed at once to profit and loss account. The accounts were thus placed on a safe and sound footing. They now saw their way, he thought, to make a profit out of their copper ore alone; and, to illustrate the effect of this, he might say that if the Tharsis Company had been able to make their copper cover all costs for the past year they would have had a profit on the 330,000 tons of ore they brought home of 44s. a ton, as their iron and sulphur realised that price. The importance to the Huntington of obtaining some value for their sulphur could not be over estimated.——Mr. WILSON seconded the motion.

Messrs. MATHIE and GRAY put the question to show that the promises in the prospectus had not been realised.

The CHAIRMAN explained that until they obtained a market for the sulphur much of the ore could not be treated with profit. The mine, however, was now in a better position than when they took it.

Mr. SMITH thought there was a feeling of dissatisfaction among the shareholders regarding the affairs of the company, and he accordingly desired to move that the meeting be adjourned until proper accounts, showing what the company possessed and the value of their properties, were placed before the directors.

The CHAIRMAN said there was no necessity for adjourning the meeting for such a purpose.

Mr. MATHIE thought, from the dissatisfaction of the meeting with the whole concern, and the outrageous difference between the result compared with the hopes held out in the prospectus, it was a fair question for the shareholders to consider whether they had not a legitimate claim upon the vendors. He suggested in the circumstances, and was prepared to put his suggestion as a motion, that the meeting appoint a committee to investigate the whole concern.

The CHAIRMAN warned the meeting that if a committee were appointed he would no longer act as a director. He had experience enough already of the disastrous effect of a committee in a company with which he was connected.

A SHAREHOLDER wished to recall to the mind of the Chairman that the committee appointed in connection with the Merry and Cuninghame Company had not a disastrous effect.

Another SHAREHOLDER remarked that if false statements were made in the prospectus they had a claim, not only on the vendors, but also on the directors, and the Chairman should not retire when his deeds were called in question.

The CHAIRMAN said he had not been accustomed to retire when his deeds were questioned. Every shareholder was entitled to see the accounts if he called at the office, and to look into the matter for himself.

A SHAREHOLDER expressed the opinion that nothing should give the directors greater pleasure than the appointment of a committee of investigation in the circumstances. He thought Mr. Henderson ought to allow his name to continue, and that the directors should do everything in their power to put the company in a sound and safe position.

The CHAIRMAN assured the meeting that was what he had long been doing. No man had given more time and trouble to these companies than he had done to that and other companies, and he had put a large sum of money into them. To that concern particularly he had given much time without fee or reward.

A SHAREHOLDER asked the Chairman if he really thought the company was sound.——The CHAIRMAN stated that it was his opinion that the company was gaining profit now. It was his opinion also that they had a first rate mine in Huntington. The company were getting better in funds, which were increasing every day, and there was not the slightest reason to expect any fall.

Some desultory discussion followed, in the course of which Mr. Dixon impressed on the meeting the importance of Mr. Henderson remaining at the helm. Ultimately, the other amendments having been withdrawn, it was agreed to take a vote on the two propositions now before the meeting—the one for the adoption of the report and the other for the appointment of a committee of investigation. For the Chairman's motion 10 votes were given; while Mr. Mathie's, for the investigation committee, received 23 votes. Thereupon the Chairman said they would insist upon a poll, as it was not by a show of hands, but by the number of shares the matter could be decided. It would, therefore, be necessary for the shareholders to come and give their names. After a pause, the Chairman added that Mr. Clark had told him that a show of hands was quite sufficient.

Mr. WILSON (director) said that if the motion for the committee of investigation were withdrawn the directors would be perfectly willing to accept Mr. Smith's motion for the adjournment of the meeting that fuller accounts should be given. He was certain that everyone who knew Mr. Henderson's position on the board must recognise that it was of the utmost importance he should remain in his present position. But Mr. Henderson had stated that he would not remain if the committee was appointed, and the shareholders in giving their decision should look at the matter as it would benefit the company.

Mr. SMITH thought the offer made should be accepted. It was only fair that Mr. Henderson should get a fair chance of putting the accounts before the shareholders in a ship shape form.

The CHAIRMAN said nothing would give him greater pleasure than to place everything before the shareholders.

Mr. DIXON proposed that the meeting should adjourn for a month, and that the accounts should be prepared and sent to the shareholders.

This motion was agreed to, and upon the question of the election of directors and auditors being brought forward M. WILSON intimated his resignation of his seat in the directorate, as it was not suitable for him to come from St. Andrews, where he resides, to attend the meetings. After some conversation, it was agreed to defer the election of directors until the adjourned meeting.

PEDN-AN-DREA UNITED MINES.—At a meeting on Monday, the accounts presented showed—Costs for eight months ending May 14, including merchants' bills, 16,211*l.*, bankers' charges 52*l.*, lord's dues 544*l.*—together 16,108*l.* Against these debits stands—Seven months' sales of black tin sold 10,697*l.*, arsenic 378*l.*, showing a deficiency of 5733*l.* To meet this adverse balance, and to provide for future operations, a call was made of 15s. per 9530th share, equal to 7147*l.* The Chairman reported that the mine had been thoroughly inspected and reported on by Capt. Teague and Son, the well known managers of Tincroft, Carn Brea, and other mines, whose report was most satisfactory. Their report concluded with the following remarks;—"We found Capt. Tregay, Mr. Cardozo, and the agents very obliging, rendering us every information. Capt. Tregay, we believe, is using every economy in the carrying out of the works on the mine, which works are being ably done." In the present time of so general a depression in Cornish tin mining, not confined to one district only, resulting from low prices having prevailed for an unusual length of time, it is gratifying to find a company of gentlemen boldly facing all difficulties and preparing for extended operations. This course distinctively marks the confidence they have in the mines, in the agents employed to carry them out, and in the firm hope of the return to better prices for tin prevailing. These mines have established themselves as abundantly productive, and of increasing importance.

SOUTH CLEVELAND IRONWORKS.—At a meeting of the shareholders, held on Wednesday, at the City Terminus Hotel, it was resolved to wind-up the company voluntarily, and that application be made to continue such winding-up under the supervision of the Court. Mr. Robert Dixon and Mr. Francis Cooper (Cooper Brothers and Co.) were unanimously appointed liquidators, with a committee of consultation of shareholders and creditors. A plan of reconstruction was proposed at the same meeting, and a large number of signatures were attached to a subscription te provide the requisite capital.

'For remainder of Meetings see to-day's Journal.]

FOREIGN MINING AND METALLURGY.

Some transactions of no great importance have occurred this week in Belgium in merchants' iron, but they have not been sufficient to change the general aspect of the Belgian market, which has continued sombre. The John Cockerill Company recently tendered for a great bridge at Rotterdam, involving an outlay of about 40,000*l.* The amount of the tender of the John Cockerill Company was 1600*l.* below the lowest Dutch tender, which was, however, accepted in consequence of the preferential protection accorded by the Dutch Government to Dutch workshops. In future treaties of commerce the question of international adjudications seems likely to occupy a prominent place. Contracts have just been let for two lots of ten tenders required for the Belgian State railways. MM. Durieux and Co., of Louvain, carried off the first lot at 2010*l.*; and M. Germain, of Marchienne, obtained the second lot at 1859*l.* The dividend of the Marcinelle and Couillet Company for 1874 has been fixed at 1*l.* per share, and not at 16s. per share, as recently indicated.

Business in the French iron trade is still attended with some difficulty, orders being rather scarce. At Paris the iron market has been very quiet. The workshops have generally no great amount of employment, with the exception of certain establishments which are kept going by orders involved by the construction of new tramways. Upon the St. Dizier market prices have exhibited a certain feebleness, except for wrought-iron, sheets, and axles. In the Centre, metallurgical industry, which had preserved a certain vitality in the general weakness, thanks to railway orders, now begins to see employment fall off, and shares in consequence in the general depression. In the Meurthe-et-Moselle pig remains in much the same state as hitherto. M. Morandière, Inspector-General of Bridges and Roads, and construction director of the Orleans Railway Company, has died in the course of the last few days. M. Morandière carried out in the course of his career somewhere about 1100 miles of railway, and the amount expended on the works executed under his direction was upwards of 16,000,000*l.* Pig and scrap iron was imported into France in the first five months of this year to the extent of 72,541 tons; iron and plates to the extent of 13,142 tons; steel to the extent of 3069 tons; and works in iron, cast-iron, and steel to the extent of 15,149 tons. The exports of iron of all kinds from France in the first five months of this year amounted to 79,066 tons. The imports of pig have increased, but those of iron have declined. The exports show a decrease of nearly 25 per cent. this year. As regards iron minerals, they were imported into France in the first five months of this year to the extent of 358,833 tons, showing an augmentation of 20 per cent. as compared with the corresponding period of 1874. The exports of minerals from France declined, on the contrary, some 30 per cent., their total having amounted to 66,000 tons.

Transactions in copper have presented generally no great importance; nevertheless metals have exhibited, upon the whole, a good tone in the French capital. At Marseilles copper has been quiet. In Germany business in copper has been in a somewhat languishing condition. There has been only a small current of business in tin at Rotterdam; disposeable lots have been, upon the whole, firmly supported, although holders have exhibited, perhaps, rather more disposition to sell. Banca has been obtainable at Rotterdam at 51 fls., and Billiton at 49¼ fls. At Paris, English copper, delivered at Havre or Rouen, has brought 92*l.* per ton. Upon the German markets prices have been the turn in favour of buyers. A slight advance has occurred in lead at Paris. The Marseilles lead market has shown indecision; there have been some rather important arrivals of Spanish lead at Marseilles. In Germany lead has ruled quiet. Quotations for zinc have exhibited no appreciable change at Paris; at Marseilles, rolled Vieille Montagne has brought 32*l.* per ton. The German zinc markets have been generally inactive.

A strike which occurred recently in the Borinage appears to have terminated. Nearly all the miners have resumed work. There is little new to report in the Belgian coal trade either as regards transactions or quotations. There is a complete stagnation of affairs, and little animation in the markets. Deliveries are being made at present rather by railway than by water, in consequence of the temparary closing of some of the canals. The net profits realised last year by the Belgian Collieries Company amounted to 32,524*l.*, or a little over 11 per cent. upon the capital employed. This was a good result, considering that 1874 was a period of depression for the Belgian coal trade.

The aspect of the French coal markets continues unchanged. Business is very quiet, although a few orders of no very great importance continue to come to hand. Stocks are accumulating at the

pits' mouths. The departments of the Nord and the Pas-de-Calais have officially proposed to advance 380,000*l.* in the execution of works for the improvement of the River Aa, the Upper Scarpe, and the Neuf-Gossé, the Bourbourg and the Calais Canals. These works will afford new outlets to the sea for the products of the coal basins of the Nord and the Pas-de-Calais.

Advices from Essen, in Rhenish Prussia, state that the coal trade of that district is in an extremely quiet state. The consumption has greatly fallen off at the various works, and the extraction has been reduced accordingly; but for the outlets afforded by the Luxembourg, Alsace, Bremen, Hamburg, and the North of Belgium the position of the Essen coal trade would be one of very extreme difficulty. Gas coal is quoted at 9s. 6d. to 10s. 6d. per ton in the Essen group. Washed coke has brought 14s. to 15s. per ton. The collieries of the Essen group employed in 1873 some 80,000 working miners, who extracted between them 15,350,000 tons of coal. In 1874 the number of men employed was 74,000, and the extraction effected was 16,220,000 tons. Stocks are inconsiderable, and the coal raised is readily disposed of. Soundings for coal have been prosecuted of late in the Dutch Limbourg, and a good vein has just been struck near Voerendaal at a depth of about 1000 ft. The Dutch Government is charged with apathy in connection with this discovery.

FOREIGN MINES.

SIERRA BUTTES (Gold).—At a meeting of the directors, held on Tuesday, an interim dividend of 2s. per share, free of income tax, was declared on Sierra Buttes (Plumas Eureka) shares.

LONDON AND CALIFORNIA.—At a meeting of the directors, held on Tuesday, an interim dividend of 1s. per share, free of income tax, was declared.

DON PEDRO.—Telegram from Rio, June 26: Produce for the month (May) 8400 oits.; profit, 400*l.*; produce, 2550 oits.

— Letter from mine captains, dated May 23: The ore returned this week has again been derived from the canoa and Nos. 6 and 8 shoots. Only little boxwork has been extracted from No. 8 shoot, and that obtained is of a very fair standard, but we regret to say it is not so rich as it has been. The produce from general work throughout the week is of a low standard. Operations throughout the week have proved very satisfactory. The water is lessening in the mine; it is now 18·94 cubic feet per minute. The 35 fm. level cross-cut is still continued; the samples are very poor. In our explorations we have one black driving the adit level in an easterly direction, and one black rising the vertical rise from No. 6 at the 25 fm. level. The pumping machinery is working very satisfactorily, but the surface water is gradually lessening, and the water is still kept out of the mine.

— May 31: The ore returned has again been derived from the canoa and Nos. 6 and 8 shoots. The boxwork has been taken from the canoa and No. 8 shoots; the vein where the rich boxwork has been derived from No. 8 shoot is at present of a very low standard; the lode has made a change, it is in a disturbed state, but the vein may improve again when the lode gets more settled. Operations throughout the mine are progressing very satisfactorily. The water being drawn from the mine amounts to 18·94 cubic feet per minute. Stoping has been continued as usual. Pumping machinery is working very satisfactorily. Dawson's wheel was idle on Saturday 3¼ hours to do some repairs to the launders and rowls; the water was put in fork from the bottom of the mine in 35 hours. The 35 fm. level cross-cut still continues, but the samples are very poor. We have driven through No. 8 shoot. In our explorations nothing new to report.

RICHMOND.—Cablegram from the mine at Eureka, Nevada: Hall, London: Week's run, $51,000.

COLORADO TERRIBLE LODE.—Telegram received July 1: Injunction granted against Hamill.

PORT PHILLIP AND COLONIAL (Gold).—Telegram, dated Melbourne, June 28: Month ending June 16: Yield per ton, 3 dwts. 21 grs.; western reef, 4 dwts, per ton.

MINERAL HILL (Silver).—Mr. Hoskins, the superintendent, June 7: The week's produce from the company's mines not on lease is 20 tons of $45 ore, and there has been worked at the company's mill during the same time 76 tons of ore, which gave an average bullion extraction of $50·12 per ton, from waste dumps, ore from leases, and ore purchased. The Star and Troy Mines, working by eight men, are looking a trifle better.

ANTIOQUIA (Frontino).—The directors have advices, under date May 11, accompanied by a remittance of gold, valued at 224*l.* 14s. 2d., the produce of the mines for the month of May last.

FRONTINO AND BOLIVIA.—The directors have advices, under date May 12, accompanied by a remittance of gold, valued at 2005*l.* 5s., the produce of the mines, and from gold purchased at the mines, for the month ending April 20. The accounts show a profit of 863*l.* 0s. 8d.

UNITED MEXICAN.—May 24: In Jesus Maria Mine work had been carried on as in former months. The buscon sales had been somewhat better. The timbering of the shaft was nearly finished.—New Concern: The end, west of the adit, is being driven on in the carbonate of lime met with in the former mouth, and water was coming freely from it. Though the rock was hard an advance of 5 15-100ths metres had been made in the two weeks. Work had been resumed in Santa Elodia. The ventilator sent out from England had been placed, and though only worked at intervals had given considerable relief by a supply of air to the workmen. The ore in the upper workings had improved a little. In Buenos Ayres the water had gone down 4 metres in a fortnight, and a winze with some stones of ore against the upper wall had been discovered.

SANTA BARBARA (Gold).—Mr. Hilcke (Pari, May 24) reports that the general appearance of the lode is about the same as when last advised, excepting that a pleasing improvement in the auriferous quality of the stone has taken place in the stopes between Nos. 1 and 2 levels, and the ore from this place (hitherto the poorest operated on in the mine) will, the manager expects, be nearly as productive as that from the stopes below No. 3 level. Harvest time being on, a considerable falling off in the force of native labourers had been experienced, which interfered somewhat with the returns of mineral.

INDEPENDENCE (Gold).—The mine report for the week ending June 5 is to hand. There was no change in the character of the work being performed. The cross-cuts north and south, in 3rd level, were in 36 ft. and 18 ft. respectively. In the former there was every appearance of an early change, and in all probability a new vein of quartz will be struck.

BATTLE MOUNTAIN.—Captain Richards, June 10: In the 330 ft. level, north of the new shaft, we have had to strip down a piece of the side against the wall; good progress is being made again going ahead; the ledge is large, strong, and healthy-looking, and producing occasional splendid stones of red oxide of copper, with much stain of ore also about the drift. The stopes north of Smith's winze, below the 260 ft. level, north of the new shaft, produce some rich ores of blue, green, and red oxide. In the stopes in back of the 260 ft. level, south of Cook's winze, north of the new shaft, some splendid ore has been raised. In the stopes in bottom of the 260 ft. level, north of the new shaft, near Stevens's and Tonkin's winzes, the lode is large, containing a small streak of rich ore. In the 260 ft. level, south of the new shaft, the ground has been very hard, and although a cross-cut eastward of 50 ft. has been put in there are no defined walls, but a disturbed state of ledge matter—300 sacks raised during the week.

MALABAR.—G. B. O'Reilly, May 19: The Mine: We are now opening into the high banks on line 24, 25 M., but, owing to the presence of some pipe-clay, we are obliged to make rather intermittent running until we obtain a larger front to operate on. Both Mr. Anderson and myself are of opinion that the gravel banks now exposed are off the channel, and if such proves to be the case we shall bear off more to the east in our next run. The gravel we are now washing on, although pretty fair in appearance, is evidently poor in gold. The quantity we are enabled to run off in a day's washing is very great, but our sluice from appearances does not give promise of a large clean-up; however, it is impossible to say as yet what the result may be, as we intend to run as much ground as possible until the end of the month before the cleaning up.

MALPASO.—Cuthbert Druitt, May 18: We have just cleaned up again. I did not take up the entire length of sluice, but left a portion (350 ft. in length) which it was not necessary to disturb, but I am obliged to take up the blocks lower down to effect necessary repairs. The amalgam that we took up gives 126 oz. 6 dwts. fine gold, and according to my estimate the total value of the run would be about $3483 (725*l.*), which I am afraid cannot be considered satisfactory, considering that we have run 981 hours, 618 of which have been on new ground. I have now decided upon abandoning the high banks, for the present at any rate, as I am convinced that what little gold we have got has all come from the banks on the left. The next run will be made off these lower banks, and although they are lower, and in some places nearly half waste, I believe we shall do much better. There is no doubt that the present cut is on the extreme edge of the basin as the bed rock rises very rapidly, and there are more large boulders to be encountered on the right. For the present, however, we can go on without bringing in a new cut, and I hope we shall be able to go on until we have the new ditch in, without more piping and more water, then start in 20 or 30 feet deeper, and run up a cut parallel, or nearly so, with the present one. In the meantime, though the last run has not been quite so profitable as might have been wished, I do not feel inclined to despair of getting some very good results presently. It is a good sign that the greater part of the gold we have now got is of very much coarser grain than any we have had here yet, and I believe that it all comes from one narrow streak running away to the left, and if we can follow it up we may secure some very good returns from it.

TOLIMA.—The advices show a loss on Frias April workings of $639 7½c. This apparently unsatisfactory result of the month's operations is explained by the mining captain to have arisen from the works in the 20 north-east level having struck some previously undiscovered old Spanish workings, and thence flooded the mines during the last 10 days of the month. On the fifth of the following month (May) the water had been got under, and the newly-discovered Spanish workings explored, and found to offer promise of very rich deposits of ore. This discovery is considered to add most materially to the value of the mine. —Surface Works: The wheel-pit is completed, and the carpenters are busy making the wheel. Our dressing operations having progressed rapidly in the early part of the month, the interruption of this department, occasioned by the necessity which arose of applying all our water-power to the pumps to clear the works, as stated above, did not greatly affect our sampling. The drought has somewhat retarded our dressing; withal we were able to sample 368 serrons, equal to about 20 tons 10 cwts.—Alfred Harper. Alluvial Gold Deposits: Regarding these works Mr. Welton, who was still at Frias on April 18, observes—"Within a few weeks a sufficient supply of water will be got in to enable the working of these mines to be carried on continuously." Whilst the new manager, Mr. Lucas, writing at the same time, on that subject, says—"There appears to be every hope of a sufficient supply of water to work these deposits, and I trust in my next to be enabled to give you further information as to this." It must be borne in mind that the supply of water, referred to by Mr. Welton as obtainable in a few weeks, is a small stream, adequate at the most to a pressure of 100 Californian inches, which can only be looked upon as a temporary and intermediate arrangement; whilst Mr. Lucas refers to a large body of water, equal to a pressure of 400 or 500 Californian inches, to be obtained from a distance.

BENSBERG.—Capt. Craze, June 28: Victoria Shaft: The shaftmen have now finished cutting ground for cistern, and we shall now commence to fix plunger-lift, put in slide for main-rod, &c. I hope to get the work completed this week. The 14, west of this shaft, produces 3 tons of ore per fathom, but there is more pyrites in the lode, which makes it troublesome to dress, and the end is letting out more water, quite a stroke a minute more for the engine. There is no change in the stope in the back of this level. The same remark will apply to the level west of new shaft. On the whole, I think our progress throughout the mine is good. Stuff put to dressing 40 tons, producing 7½ tons of ore of 45 per cent.

[For remainder of Foreign Mines, see to-day's Journal.]

THE "CHAMPION" ROCK BORER.

In a previous issue of the *Mining Journal* attention was drawn to the "Champion" Rock Borer, now being introduced by Messrs. ULLATHORNE and Co., of Metropolitan-buildings, Queen Victoria-street. During this month several trials of one of these rock borers (a No. 2 size) have taken place, for the purpose of demonstrating the perfect action of the automatic, or self-feed, the results in every case proving the excellence of the machine. The material selected to operate upon was some very tough close-grained granite, extremely difficult to bore by hand. The "Champion" Rock Borer was set to bore in various directions, both vertically and horizontally, the latter to exemplify the applicability of the machine for driving tunnels, galleries, headings, &c., underground, as well as for quarries. With a pressure of steam of 45 lbs. per square inch at the boiler, some distance away, a speed of 6·2 in. per minute was attained when boring 1¾-in. diameter holes. Considering the portability of the machine and its weight (only 1 cwt. 3 qrs., without the stand), this performance was, no doubt, wonderful, especially compared with the slow progress effected by hand labour. During each of the trials the self-feed was in gear, so that the machine steadily and gradually wound itself forward, without manual aid, exactly in proportion as the steel drill penetrated the rock. A special feature of this self-feed is that all strain is avoided, by causing the feed to take place on the backward stroke of the piston, not at the time the steel drill is striking the rock. There is little doubt that where hard rock has to be blasted the use of machine rock borers will sooner or later gradually supersede hand drilling; and the introduction of a comparatively inexpensive implement like the "Champion," which is apparently simple and durable, will be appreciated by those who are anxious to effect an economy of time and labour.

COMFORT FOR TRAVELLERS—WARMING RAILWAY CARRIAGES.

There is probably nothing which renders railway travelling in winter so objectionable, and nothing which so induces the man of business to limit to the utmost the number of journeys he makes, as the distressing cheerlessness and low spirits depicted on the features of the travellers in consequence of the freezing temperature of the carriages in which they have to travel. It is not alone the unfortunate fellow who has, perhaps, once or twice a week to undergo the torture of five hours confinement upon journeys from Manchester to London and back, or others of equal duration, that has to suffer from that unnecessary exposure to cold, combined with inability to take the smallest exercise, but the now almost innumerable "local travellers"—those who reside 40 or 50 minutes journey from their place of business, and are thus compelled twice a day throughout the season to ride long enough to make them cold and miserable for the succeeding two hours. As these are the two classes which certainly afford the most constant source of revenue to the railway companies the directors should surely do their best to promote their comfort in so necessary a matter as the warming of railway carriages, more especially as an invention has now been patented by which the warming can be effected, in some cases almost without cost, with an apparatus of a very inexpensive character.

The object of the invention of Mr. WILLIAM TICE, of Worsley, Lancashire, is primarily to warm railway carriages, but it is also applicable to the warming of steam-vessels, &c., and he is careful to deal with the air in such a manner that none shall be supplied but that which is free from deleterious gases, or other prejudicial matters, and may be pure and at a proper temperature for respiration. For this purpose, according to his invention, he fits pipes, or other conduits or vessels, in such manner that they shall pass through or be within water or steam, or both, contained in a boiler, steam-generator, or other receptacle, and he causes these pipes, conduits, or vessels to communicate at one end by bell mouths, or other contrivances or means, with the atmospheric air, so that the air passes or rushes therein. The air is heated or warmed by the hot air or steam in the pipes, conduits, or vessels, and is conveyed thence through suitable tubes or passages into the interior of the carriages, ships, or other structures to be warmed. These tubes or passages are, if necessary, connected by couplings or joints, and provided with valves, cocks, or such like regulating or controlling contrivances.

At the front of the locomotive a tube is provided, which ends in a bell mouth to receive the fresh air which is subsequently to be applied for warming purposes; this tube being continued beneath the entire train, each compartment of each carriage being provided with a branch pipe and a sliding shutter valve, under the control of the passengers. It should be mentioned that the heating of the main pipe can be effected in the smoke box or in any other convenient place, and need not necessarily be passed through the water space or steam space of the boiler, which, of course, would not be sanctioned by anyone acquainted with the use of steam, since enormous and unnecessary waste of fuel would inevitably occur, owing to the excessive cooling effect which the tube would produce upon the interior of the boiler.

Sometimes it is convenient that the air passing in and to be used for warming should be carried in suitable conduits through a chamber jacket or casing fitted outside the boiler, generator, or receptacle in which heat is applied or maintained, so as to receive heat therefrom, such heated air being conveyed to the carriages or places to be warmed. Or hot-air passages or chambers may surround the air-chamber to obtain the necessary heat. The air having been warmed, whatever arrangement of warming may be used, the system of distribution is the same. It is explained that the back end of the heating tube is connected by elastic joints or other proper couplings with secondary tubes or pipes, there being one such pipe to every carriage of the train, whereby a passage or thoroughfare is made for the air passing through the heating tube to the carriages making up the train.

A vertical branch pipe leads upward from the secondary pipe, and communicates with a hot-air box in the compartment to be warmed. The top of this box is formed with a number of openings or perforated portions alternating with non-perforated or solid portions. Over this box is a plate also formed with alternated openings or perforated portions and non-perforated or solid portions. This plate slides in guide-ways or grooves on the top or upper part of the box. There is a handle or knob fixed to the plate, by means of which the perforations or openings in the top of the box are uncovered to admit the heated air, and covered in order to exclude it when required. It is obvious that other ordinary contrivances for admitting and intercepting the entry of warm air from the box through the perforations or openings therein may be employed.

Assuming that the heating tube or coil is so arranged that the air can be heated without lowering the temperature of the water or steam within the boiler, and there is really no practical difficulty in doing this, the invention would appear to offer a simple and efficient means of attaining a very important object, and the inventor should have no difficulty in securing its extensive adoption.

LEAD PIPES FOR DRINKING-WATER.—In an interesting lecture on water, Dr. C. F. Chandler, of the Columbia College School of Mines, remarked that the well-known action of lead in producing paralysis and other diseases has induced some persons to dispense with the use of lead pipe entirely, while others have employed it only with fear and trembling. As yet no substitute has been found as cheap, durable, and convenient to manipulate as lead pipe. Such being the case, we would call attention to some of the plans proposed for rendering the pipes incapable of polluting the water, or for removing the lead which has been dissolved. As far as practicable we should choose prevention rather than cure, and endeavour in the first place to protect the pipe from the action of the water. Fortunately, he continues, there is a method of accomplishing that, and goes on to refer to the invention of Dr. H. Schwartz, of Breslau, but quotes a publication in November, 1863, as the earliest in English. This is not the case. The first description in English was published in the *Mining Journal* of Sept. 19, 1863 (the specification of the patent was not obtainable until October, 1863), and this description was copied, and the source acknowledged, in a very large number of newspapers in England, America, and Australia. It was explained that Dr. Schwartz's process consisted in treating the pipes for 10 or 15 minutes with a 2 to 5 per cent. solution of sulphuret of potassium or of sodium, at a temperature of 212° F. A boiling solution of sulphur in caustic soda is found to answer perfectly. Dr. Chandler further mentions that a strong proof of the insolubility of sulphuret of lead is the fact that water from galena mines never contains a trace of lead. Still a doubt might arise as to the equal power of the artificial sulphuret to resist the action of water. Fortunately here, too, we have experimental proof to rely on. In the Bulletin de la Societe Chimique de Paris, Dec. 20, 1873, it stated that Willm has made a series of experiments with lead pipe coated on the inside with sulphuret of lead, formed by the action of sulphuret of sodium upon the pipe, according to Dr. Schwartz's process. These pipes were exposed, at the same time with other unprotected pipes, to the action of rain water, snow water, distilled water, and the city water. On the following day he found a perceptible quantity of lead in the water which ran through the unprotected pipes, except in the case of city water, where traces of lead were found after a few days. For three months, however, and in the presence of air, the coated pipes did not contaminate the water flowing through them.

PURIFYING REFUSE TIN-PLATE PICKLE.—Certain improvements in treating refuse pickle were patented by Mr. W. J. PUGHSLEY, of Kidwelly, in June, 1864. In lieu of bottling the sulphuric acid obtained from the refuse pickle, according to that invention, direct from the lead tank for the use of the picklers, by the present improvements he causes it to run into the upper compartment or cistern of a filter through a suitable receiving pipe, and from which it escapes (through a coarse flannel strainer having a perforated copper plate at its top) to and permeates a deep layer of charcoal in the lower compartment, and then through a layer of small pebbles stones obtained from fresh water, and, lastly, escapes from the filter through a perforated wooden chamber, and a wood tap fixed therein into a glass bottle, and it is then ready for re-use by white or black picklers as previously. The discolouration of river or other stream water adjacent to the tin-plate works is caused by the scouring water used at such works, in a tank containing which the plates are placed after having been taken out of the pickle, until the acid is removed from them. To prevent this discolouration he constructs a filtering apparatus in the water-course of the scouring water, and causes the latter to pass, firstly, through a layer of limestone, which will retain any dirt that may have accumulated. The filter he constructs of brick, and forms it of an upper layer of charcoal, separated by a perforated elm plank from a lower layer of burnt bones. The bones absorb the acid, and prevent any from escaping to the stream. The white pickle he runs into a tank (instead of into the river or stream), in which he allows it to settle, and subsequently passes it over into a filtering apparatus of the construction hereafter described, and thence to the black plate picklers to be re-used, mixed with best vitriol. Subsequently he causes all the black and white pickle to pass through the processes described in 1864, so as again to obtain the sulyhuric acid for re-use. The tank lastly above referred to may be made of brick or of any suitable substitute, such as a palm oil cask, arranged so as to receive the pickle from the picklers' pot. The filtering apparatus he constructs of wood, with a filtering medium of charcoal only. He also provides it with a wood tap, by which the filtered acid can be withdrawn for the black picklers.

TIN BOXES.—The vastly-increased manufacture of fancy biscuits which late years has witnessed led to a large demand for tin boxes wherein to pack them for transport. The edges of these boxes were formerly soldered together in the same way that those of other tin goods are. A step in advance was made a few years since by Mr. Jabez James in some tin box-making machinery, which he designed and made for Messrs. Huntly and Palmer, of Reading. There the boxes were shaped and the sides jointed up in the same machine, but the bottoms had to be soldered in. Recently, however, Mr. James has devised a plan whereby the use of solder is entirely dispensed with, the bottoms being fixed in by machinery. Mr. James has just completed a box-making machine for the Reading firm, which has been inspected by a number of engineers at the manufacturer's works in Prince's-street, Lambeth. The machine measures about 14 ft. long by 6 ft. wide, and stands about 6 ft. high. At one end is a table on to which the plates of tin are fed, they having first been trimmed, squared, and pierced at certain points along their edges. From the feeding table each plate is drawn into a hopper, from which it is conducted under a presser plate, where it is acted upon by rollers, and gets one of its edges turned up in the form of a hook. It is then moved forward another stage under a hopper containing a number of copper-coated wires. The hooked edge of the tin-plate releases one of these wires, which it takes with it, and at the next point the wire is pressed into the groove of the plate by a cam action. A presser plate then holds the sheet of tin down, while another roller acts upon the hooked edge, curling it entirely around the wire. This forms the top edge of the box. The plate is then mechanically moved on another stage, where one of the sides of the box is folded up, and the edge of the tin at the opposite end of the sheet is turned up to form the joint. It is then moved along to the next stage, where a mandril passes over it, and where the plate is further bent or angled round the mandril by means of steel jaws. The two ends of the tin-plate are then brought together, folded into a seam, and pressed by means of a lever, at the end of which is a hollow-headed hammer. The mandril is then withdrawn, and the box without a bottom is thrown out of the machine to the side, where it is received by an attendant. It is then transferred to another machine, where the bottom is mechanically affixed, the lids also being made in a somewhat similar manner. The apparatus is exceedingly precise in its action, and works very smoothly and quietly, turning out boxes at the rate of eight per minute in ordinary work. It is attended by three boys, one of whom feeds the tin-plates on to the table, the second feeds the framing wires into the hopper, and the third receives the boxes as they are turned out of the machine. The apparatus is automatic, all the varied processes following each other consecutively, but rapidly, each box only taking 7½ seconds to make. The speed, of course, can be increased, but that indicated is found to be the best suited for turning out sound, well-finished work.

PEAT FUEL.—The invention of Messrs. DAVIES, TURLEY, and NEWELL, of Liverpool, relates—1. To improvements in tools for obtaining peat from peat lands.—2. To a system of platforms and trays and apparatus for masticating and working the peat when obtained.—3. To apparatus and tools for moulding and cutting the peat into blocks for use.—4. To ovens and a method of arranging peat in such ovens for carbonising the peat and producing peat charcoal.—5. To apparatus for cutting peat into strips for fire lighters.—6. To a composition for dressing or preparing for use such fire lighters.

MACHINERY FOR STAMPING METALS.—The hammer of the stamp is, according to the invention of Mr. J. VAUGHAN, of West Bromwich, attached to a metallic strap or band passing over a large rotating pulley. When the band is pressed tightly against the pulley the band raises the hammer. This band is pressed against the pulley by a roller acted upon by a lever, and the latter by a vertical connecting rod. A tappet is situated on the upper end of the connecting rod and the bottom of the rod is connected to a short lever near the bed of the stamp. When the parts are in their normal state a spring presses the roller against the band and the band lifts the hammer. As the hammer approaches the end of its upstroke it strikes the tappet of the connecting rod, and the roller is withdrawn from the band and the hammer falls. On the hammer nearly reaching the end of its fall it acts upon the short lever, and the spring coming into action the roller again presses on the band and the hammer is again raised. The short lever enables the working of the stamp to be controlled by hand.

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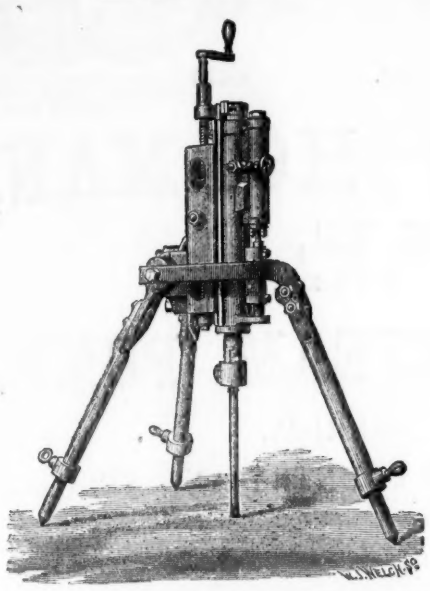

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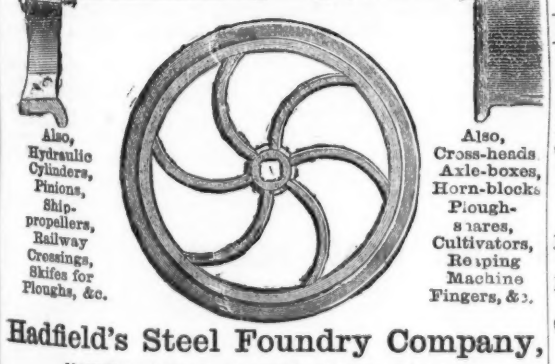

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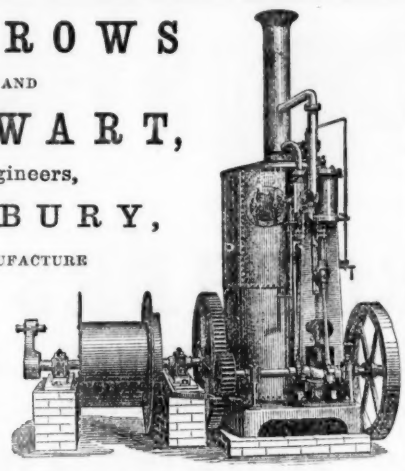

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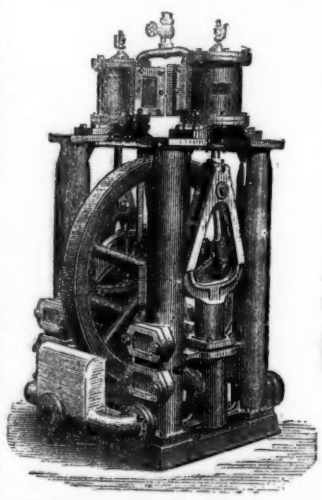

Awarded the only Prize Medal for Vertical Steam Pumps at the Pomona Show, Manchester, Nov., 1874.

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FOR LOCOMOTIVE AND MARINE BOILERS,

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MINERS

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ACCORDING TO THE NEW MINES REGULATION ACT.

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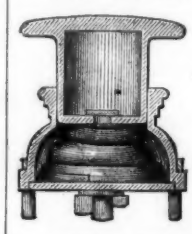

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Repairing in all its branches promptly attended to.

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Provide against the losses that follow by taking a Policy

AGAINST ACCIDENTS OF ALL KINDS,

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RAILWAY PASSENGERS ASSURANCE COMPANY.

THE OLDEST AND LARGEST ACCIDENTAL ASSURANCE COMPANY.

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ANNUAL INCOME, £180,000.

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"FATAL TO FLEAS."—"NALDIRE'S TABLET is harmless to dogs, but fatal to fleas.—FRANK BUCKLAND." This medicated soap is sold, price One Shilling, by all chemists and perfumers.

PARIS EXHIBITION, 1867.

VIENNA EXHIBITION, 1873.

LONDON EXHIBITION, 1874.

CORNWALL POLYTECHNIC SOCIETY, 1867 and 1873.

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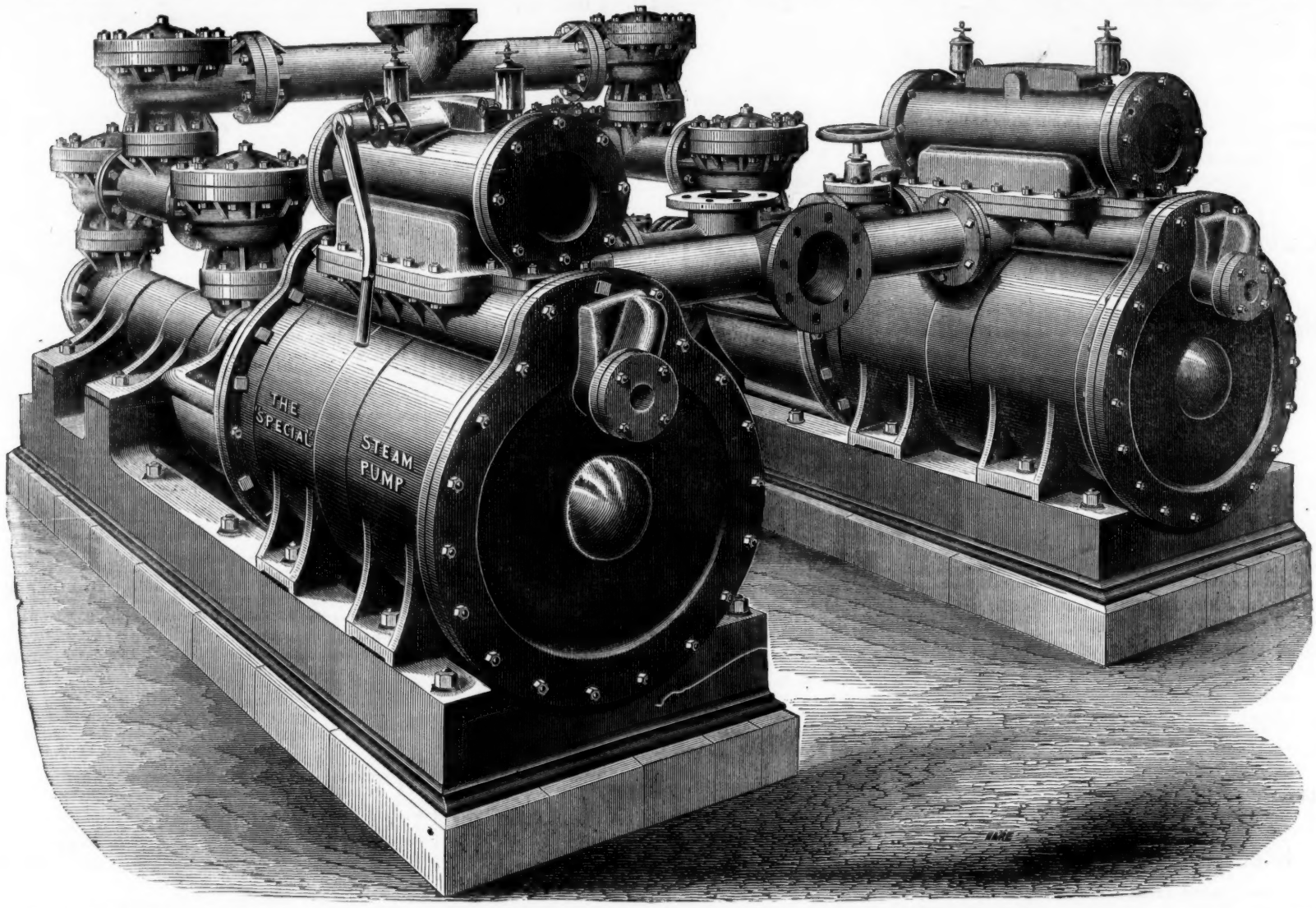
10, LAURENCE POUNTNEY LANE, LONDON, E.C.,

AND BIRMINGHAM. (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

THE "SPECIAL" DIRECT-ACTING STEAM PUMP.

OVER **12,000** IN USE IN **ENGLAND** AND AMERICA.

SUCCESSFULLY ADOPTED IN A LARGE NUMBER OF MINES IN THIS COUNTRY AND ABROAD.



PAIR OF THE "SPECIAL" DIRECT-ACTING STEAM PUMPS SUITABLE FOR HIGH LIFTS IN MINES, SIMILAR TO MANY SUPPLIED BY TANGYE BROTHERS AND HOLMAN.

The following extract from a letter, received by Tangye Brothers and Holman from J. Bigland, Esq., dated Feb. 25, 1875, refers to a "Special" Direct-acting Steam Pumping Engine supplied four years ago to Messrs. Joseph Pease and Partners, for the Adelaide Colliery, Bishop Auckland. The engine is throwing about 8000 gallons per hour, 1040 feet high, in one direct lift:—

"The underground pumping engine at Adelaide Colliery is working night and day. It does its work satisfactorily, and gives us very little trouble. Some of the cup leathers which form the plunger packing have worked three months. The working barrel is in beautiful condition. The average duration of the valve seats is about eight months; they work and keep tight as long as there is a bit of them left. I expect the valves (Holman's patent) and the buffers will last as long as the colliery."

Extract from a letter received by Tangye Brothers and Holman from W. H. Eagland, Esq., dated Feb. 27, 1875, in reference to a "Special" Direct-acting Steam Pumping Engine supplied two years ago to the West Yorkshire Iron and Coal Company near Leeds, to throw 16,000 gallons per hour, 465 feet high, in one direct lift:—

"It is at work night and day. Our man goes down to the pump twice a day (Ten A.M. and Four P.M.), to supply the tallow cups. After this it is left every day till he comes next morning, when he goes down again at Ten A.M. as before. The only repairs the pump has had for 12 months are one bucket, which had worked since we got the pump, and one valve seat, but no valve, so it has cost very little. Its first lift is 70 yards perpendicular, then the water passes up pipes for half a mile, ascending another 70 yards, and then another perpendicular pipe of 15 yards —total, 155 yards vertical height."

Extract from the Official Report of the Commission of the German Empire on the Vienna Exhibition of 1873, treating on Pumping Engines:—

"Contrary to these older pumping engines exhibited, there is now nearly everywhere the opinion established that the ('SPECIAL') pumping engines placed underground, which are made on A. S. Cameron's principle by Messrs. Tangye, are preferable to all. They do much duty combined with great compactness. They dispense entirely with the troublesome rod arrangement, giving often rise to stoppages, so that they will be applied shortly to a great extent, and are already in use in many localities. There is no doubt that this in every respect practical system will command a general adaptation."

200 SIZES AND COMBINATIONS OF THESE PUMPS ARE NOW MADE.

The following are a few of the Sizes for High Lifts in Mines:—

Diameter of Steam Cylinder .....In.	7	8	9	9	10	10	12	12	12	14	14	14	16	16	16	16	18	18	18	18	21	21	21
Ditto of Water Cylinder .....In.	3	3	3	4	3	4	3	4	5	4	5	6	4	5	6	7	5	6	7	8	5	6	7
Length of stroke .....In.	24	24	24	24	36	24	36	36	36	36	36	36	36	36	36	36	48	36	36	36	48	48	36
Gallons per hour approximate	1830	1830	1830	3250	1830	3250	1830	3250	5070	3250	5070	7330	3250	5070	7330	9750	5070	7330	9750	13,000	5070	7330	9750
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump	325	425	540	300	665	375	960	540	345	735	470	330	960	615	426	312	775	540	400	300	1058	740	540

CONTINUED.

Diameter of Steam Cylinder .....In.	21	21	21	24	24	24	24	24	26	26	26	26	26	30	30	30	30	30	32	32	32	32	32
Ditto of Water Cylinder .....In.	8	9	10	6	7	8	9	10	7	8	9	10	12	8	9	10	12	14	8	9	10	12	14
Length of stroke .....In.	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	9750	13,000	16,519	20,000	30,000	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump	413	326	264	960	700	540	427	345	827	633	500	405	282	840	665	540	375	275	960	758	625	426	313

PRICES OF ABOVE ON APPLICATION.—FOR SIZES AND PRICES OF PUMPS FOR LOWER LIFTS SEE SEPARATE LIST.

HOLMAN'S PATENT CONDENSER will be found a great acquisition to all kinds of Steam Pumps, as not only is the exhaust steam completely condensed, and the annoyance from same blowing off entirely got rid off, but a vacuum is obtained in the steam cylinder saving from 20 to 50 per cent. in fuel, and increasing to a considerable extent the economy and efficiency of the Pump.

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AN INDISPENSABLE APPENDAGE TO STEAM BOILERS.

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In operation to upwards of 2,550,000 h.p.

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SAVES 20 to 25 per cent. of Fuel.

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IRON ROOFS, IRON BUILDINGS, IRON SHEDS,

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ESTIMATES FURNISHED ON RECEIPT OF PARTICULARS.

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They require considerably less framework to carry them than ordinary slates or tiles.

ILLUSTRATED CATALOGUE ON APPLICATION.

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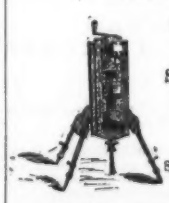
DUNN'S ROCK DRILL,

AND

AIR COMPRESSORS.



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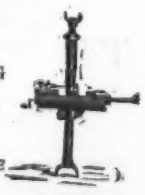

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Ore Crushers, with H.R.M.'s New Patent Crushing Jaw.

EXTENSIVELY USED BY MINE OWNERS.

Few Working Parts.
Small Wear and Tear.
Freedom from Breakage.
Simplicity of Construction.
Excellence of Sample.
Economy of Power.

ALSO,

ROAD METAL-MAKING MACHINES,

WITH

H.R.M.'s New Patent Cubing Jaw,

FOR

REDUCING THE MATERIAL TO

ANY REQUIRED SIZE.

EXCLUSIVELY ADOPTED BY HER MAJESTY'S GOVERNMENT.

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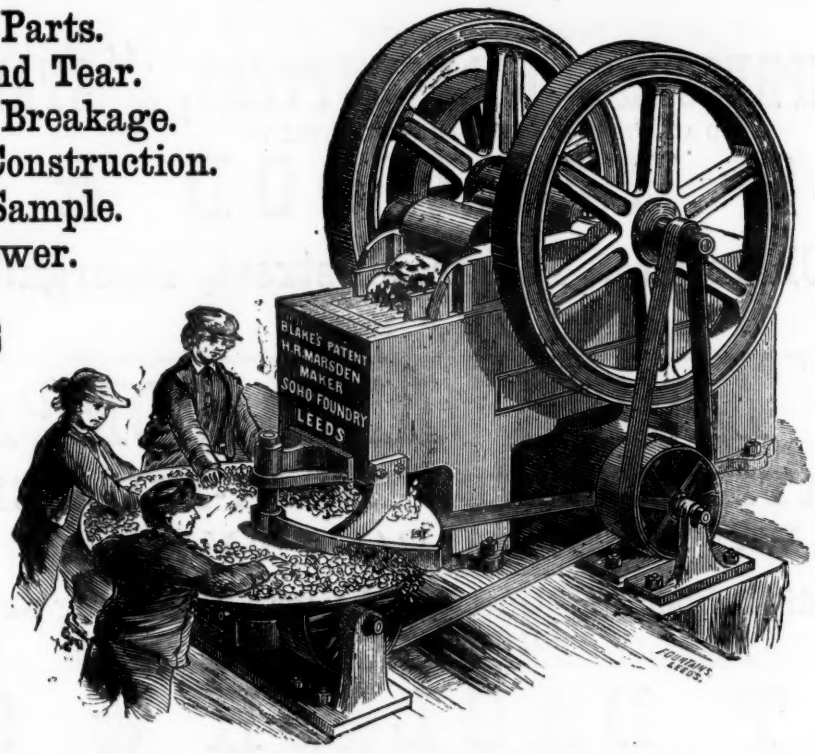
ENGINEER,

Immense Saving of Labour.



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950 NOW IN USE.

AWARDED 45 GOLD AND SILVER MEDALS.

By the PATENT MACHINE

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60 to 70 Tons of Ore

MAY BE

CRUSHED OR SEPARATED

PER DAY OF TEN HOURS.

EXTRACT FROM TESTIMONIALS:

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Patentee and Sole Maker,
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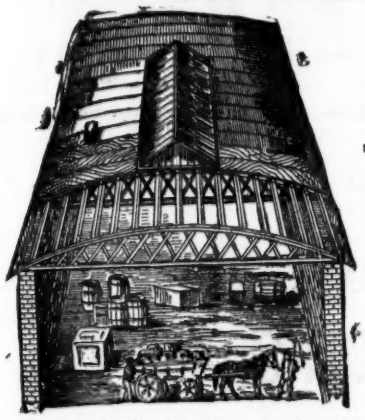
M'TEAR AND CO.'S CIRCULAR FELT ROOFING,



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MANCHESTER;
OR
CORPORATION STREET,
BELFAST.

The above drawing shows the construction of this cheap and handsome roof, now much used for covering factories, stores, sheds farm buildings, &c., the principal of which are double bow and string girders of best pine timber, sheeted with ½ in. boards, supported on the girders by purlins running longitudinally, the whole being covered with patent waterproof roofing felt. These roofs so combine lightness with strength that they can be constructed up to 100 ft. span without centre supports, thus not only affording a clear wide space, but effecting a great saving both in the cost of roof and uprights.

They can be made with or without top-lights, ventilators, &c. Felt roofs of any description executed in accordance with plans. Prices for plain roofs from 30s. to 60s. per square, according to span, size, and situation.

Manufacturers of PATENT FELTED SHEATHING, for covering ships' bottoms under copper or zinc.

INODOROUS FELT for lining damp walls and under floor cloths.

DRY HAIR FELT, for deadening sound and for covering steam pipes, thereby saving 25 per cent. in fuel by preventing the radiation of heat.

PATENT ASPHALTE ROOFING FELT, price 1d. per square foot.

Wholesale buyers and exporters allowed liberal discounts.

PATENT ROOFING VARNISH, in boxes from 3 gallons to any quantity required 8d. per gallon.

HEPBURNS'
PUMP LEATHER
WATERPROOF

By a special method of preparation, this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made It may be had of all dealers in leather, and of—

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Prize Medals, 1851, 1855, 1862, for
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CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES and FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

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For WATER SUPPLY to TOWNS, LAND IRRIGATION, and MINERAL EXPLORATIONS, may be executed of any diameter, from 6 in. to 36 in., and to any depth to 2000 ft.,

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of which upwards of 8684 have been made to March, 1875.

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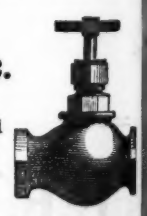

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IRON, STEEL, AND GENERAL MERCHANTS,

LIONEL STREET, BIRMINGHAM,

Manufacturers of Anvils, Vices, Hammers, Bellows, Tue Irons, Hydraulic and Screw Jacks, Crabs, Cranes, Spades, Shovels, Picks, Arms and Boxes, Axles, Springs, Hurdles and Fencing, Screw Bolts, Washers, Hames, Chains, Files, Nails, &c., &c.

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PATENT RANGOON ENGINE OIL.

THIS OIL is suitable to every kind of Machinery; it is used almost exclusively in Her Majesty's Dockyards and Fleet, and by the War Office and East India Government; as well as by the Royal Mail Steam Packet Co., Pacific Steam Navigation Co., P. and O. Co., Cunard Co., and by most of the other important Royal Mail Steam Fleets in the kingdom It is also extensively employed on the various railways, and by many of the leading engineering and manufacturing firms at home and abroad. "Chemical Laboratory, 7, Printing House-square, Blackfriars, April, 1869.

"I hereby certify that the Rangoon Engine Oil, manufactured by Messrs. Chas. Price and Co., is free from any material which can produce corrosion of the metal work of machinery. It is calculated, indeed, to protect metallic surfaces from oxidation, and, from its peculiar character, is not liable to lead to spontaneous combustion of cotton waste or any similar material which might become imbued with it, as is the case with Rape, Gallipoli, and Olive Oils. The lubricating power of this oil is equal to Sperm or Lard Oil

T. W. KEATES, F.C.S., &c., &c., Consulting Chemist to the Board of Works"

Extract from Mr. BAXTER'S Speech in the House of Commons, May 31st, 1870:—

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